

SOUTH FORK NEW RIVER SCENIC RIVER STUDY

ashe and alleghany co. north carolina

FOREWORD

On September 11, 1976, President Ford signed into law a bill creating a 26.5-mile stretch of National Scenic River along the New River in North Carolina. His action was the culmination of a 14-year battle by the citizens of North Carolina and the Nation, local, state and federal officials to preserve that stretch of river said to be the second oldest in the world. This legislation effectively established a mandate for the State of North Carolina to design a plan for the development, management, and operation of the South Fork New River.

This Master Plan Study is intended to fulfill these Federal requirements and, further, to develop a plan which will provide meaningful public use of the resource and protect those qualities for which the Scenic River was designated. Implementation of the Master Plan is contingent upon the availability of funding and the establishment of biennial statewide priorities. Specifically, the planning is aimed at achieving a variety and balance of recreational and interpretive elements with respect to parameters which establish an optimum in carrying capacity, river protection, and community appreciation. Its success will be measured by the degree to which the Scenic River will maintain those values for which it was recognized by the Nation and North Carolina.

SOUTH FORK NEW RIVER SCENIC RIVER STUDY

prepared by:

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Department of Natural and Economic Resources
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Master Planning Unit
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REGIONAL STUDY
PROJECT CONTEXT

CULTURAL HISTORY

Due to its location near the intersection of three major subareas of the Eastern Woodlands Archaeological Area, the New River area has potential for significant scientific research and discovery. This potential may be realized as a result of the study of the interrelationships of the various prehistoric cultures of the Middle Atlantic, Southeastern, and Ohio Valley subareas.

Most of the sites in the basin contain stratified cultural deposits. This condition increases the probability of gaining useful information which can be analyzed according to incremental time units. It is estimated the sites along the New River will provide information on 10,000 years of human habitation in the Appalachians in a relatively undisturbed area.

During the pre-colonial period, the New River Valley was occupied by the Canawhay Indian Tribe for which the Kanawha River in West Virginia was named. Hunting trails, which were later used by white settlers in the area, followed the New River north to the Ohio River. Few artifacts of Indian origin have been found in the area with the exception of arrowheads, pieces of pottery, and stone axes located at Old Fields. Nevertheless, a number of potential sites have been located as a result of four field investigations since 1964.

Several rock shelters were found near the confluence of the North and South Fork New River by the Archaeology Division of the North Carolina Department of Archives and History during a survey performed in 1976. While a detailed dig was not done on these sites, it is believed that these shelters were used by transient hunters on food gathering journeys.

It is known that bands of the Creek, Shawnee, and Cherokee Indian Tribes frequented the New River area as a hunting ground. The river served as a major migration route, but didn't become a region for permanent Indian settlements because the Valley was too close to the more aggressive northern tribes.

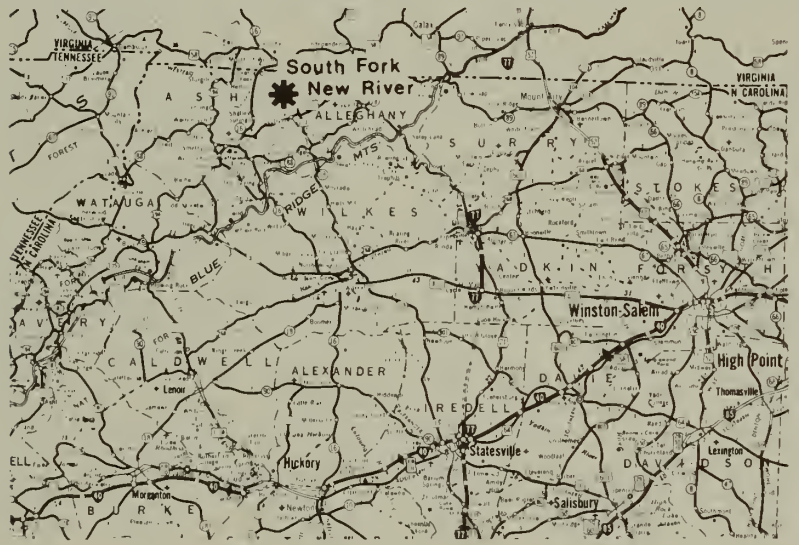
Colonel Abraham Wood is said to be the first white man to have seen the New River. Crossing the Appalachians in 1654, Wood came upon the river while attempting to open trade with the Indians. The river, in fact, was first known to the white man as Wood's River, in honor of the Colonel.

In the mid-1700's, Bishop Augustus Gottlieb Spangenberg, head of the Moravian Church in America, was given the task of locating suitable land for a larger Moravian settlement apart from its original home in Bethlehem, Pennsylvania. The Moravians had approached the Earl of Granville who owned a vast tract in Virginia, Tennessee, and North Carolina in an attempt to secure a site for the new settlement. After much negotiating Spangenberg and the Moravians were granted 100,000 acres on a quitrent basis. Thus, in 1752 Spangenberg and five others set out to explore Virginia and North Carolina in an initial survey of land. The Bishop was not impressed with Virginia due to the potential political conflicts with the French, who also laid claim to the territory, or with eastern North Carolina because of unhealthy living conditions. Moving west, Spangenberg came to the mountainous region and the New River Valley. For several months the group surveyed land in the area and attempted to determine whether the New River doubled back to the South and joined the Yadkin River, as they thought. Eventually, Bishop Spangenberg settled for a tract of land located near Winston-Salem for the new settlement.

Early settlers came to the region by way of the "Great Wagon Road" through the Shenandoah Valley and the "Upper Pennsylvania Road" and were mainly of English, German, and Scotch descent. The first buildings in the area were hunting cabins built in the late 1760's. Among these settlers was Peter Jefferson, father of Thomas Jefferson, who was a surveyor and planter in the region. It is said that, while surveying in the area, Jefferson renamed Woods River the New River.

The region was thought to be rich in mineral deposits including silver and gold and numerous small mines were opened. Iron ore was, in fact, the principal mineral extracted from the area. Rich alluvial soils along the river's floodplain enabled an agricultural society to develop and large groves of forest including black walnut, maple, hickory, chestnut, spruce, and pine were for the taking.

French claim to the land ended with the French and Indian War in 1763 but the hostility of the Indians remained and increased as settlers moved westward. The "Proclamation Line of 1763" had been established by the British, giving over the Mississippi watershed to the Indian nations. However, many settlers ignored the boundary and moved westward despite the agreement.





Site Location

In July, 1780, Captain Robert Love led a force of American rebels against 150 British Tories who were on their way to Charlotte to join Lord Cornwallis' forces at Kings Mountain. The battle, fought in Ashe County and known as the "Battle of Big Glades, " was easily won by the patriots and thought important to the eventual victory at Kings Mountain.

Although the early settlers relied a great deal on the New River for a livelihood, the river and the adjacent terrain also proved to be a barrier to eastward movement. The expense and technology required to construct bridges was prohibitive and, as a result, the region remained isolated from the east for a long period. Nevertheless, the river provided residents with raw materials and a number of grist mills, and forges were built in the early 1800's on tributaries of the New River.

By 1800 the region had been a part of two states, one foreign country, four counties, and the Indian territory. Ashe County was finally established in 1799 and the county seat situated in Jefferson (known to early residents as Jeffersonton).

In its early days the town was agriculturally based but with the advent of the Norfolk and Western railroad the production of barley, tobacco, and beans became a major industry in the region. The depot was located a short distance outside the town and induced new development around it. Thus, West Jefferson began to grow centered on the new railroad and related industries. With the opening of the Virginia-Carolina railroad in 1914, the mining industry began to develop. Although the railroad was opened for the exploitation of iron ore, large copper deposits were soon located and became the leading industry for mineral production.

The present day landscape is not a great deal different from that found around the turn of the century. Better roads and larger urban areas are found; however, the topography still imposes constraints to movement and development. Roads are

generally narrow and winding, and the smaller communities based on a church and/or country store. Few large farms are found although secondary roads are consistently scattered with one-story frame or brick homes, the majority of which are agriculturally related.

THE NEW RIVER ISSUE

In June, 1962, the Appalachian Power Company, subsidiary of American Electric Power Company, applied to the Federal Power Commission for a two-year preliminary permit to study a segment of the New River in Virginia and North Carolina. The permit, granted on March 11, 1963, enabled APCO to conduct an investigation of the feasibility of the river as a site for a hydroelectric project. APCO applied to the FPC for a license on February 27, 1965, to establish a combination conventional and pumped storage project.

The proposed development consisted of two adjoining reservoirs located 15 river miles apart in Grayson County, Virginia, and Alleghany and Ashe Counties, North Carolina. The upper reservoir would have surface area of 16,600 acres and the lower reservoir, an area of 2,850 acres. The facility would be in operation during periods of peak demand, power being generated by the flow of water from the upper to the lower reservoir. At times of lesser demand, water would be pumped back to the upper reservoir for recycling.

The license application was questioned, first by the Department of HEW, and later by the Department of Interior, on the grounds of water quality control during periods of low flow. During 1966, Interior intervened directly into the licensing investigation, indicating to APCO the proposed 25,000 acre-feet was insufficient to alleviate pollution of the lower Kanawha River below Charleston, West Virginia. It was suggested that 400,000 acre-feet of water storage was required to augment low flow. The effect was to double the land area involved in the original proposal based on a "pollution-dilution" concept. Interior's proposal was eventually ruled out by the Environmental Protection Agency.

Nevertheless, the following year, APCO developed an alternative proposal called the "Modified Blue Ridge Project" which called for substantial expansion of the original proposal. The lower reservoir would be enlarged to 14,400 acres, the upper reservoir enlarged to 26,000 acres, and the two dams separated by 30 rather than 15 river miles. The intent behind the modified proposal was to enlarge the reservoirs in order that the same amount of water could be released without a drawdown in the upper lake of more than twelve feet (ten feet in the summer season). Water storage would be enlarged to 650,000 acre-feet, potential electric power increased from 980,000 kilowatts to 1,800,000 kilowatts, and the total cost, estimated by APCO, doubled to $281,099,000. A total of 42,100 acres would be inundated in Virginia and North Carolina.

Until 1967, opposition in North Carolina to the hydroelectric project was little, consisting primarily of local landowners directly affected by the proposal and residents interested in preserving the river in its free-flowing condition. The first organized opposition to the dams came in 1967 when the Upper New River Valley Association was formed of people in the related counties. Promotion of the project was great, however, and many local residents envisioned it as a boon to an area which was rural, isolated, and economically marginal. The State of North Carolina was unacquainted with what was, at this point, a local issue.

When the hearings concerning the modified proposal took place, it became clear that if the measures proposed for water quality impoundment took place, serious degradation of the recreational resource and visual quality would occur. Mudflats exposed as a result of 30 to 40-foot drawdown during low-flow would occur along the edge of the upper reservoir. At this point,

opposition to the modified Blue Ridge Project grew. Toward the end of 1967, the State of North Carolina strongly objected to the detrimental effect of the large drawdown at the FPC hearings. Additionally, the Committee for the New River began to raise increasing support based not only on environmental concerns but also on the fact that nearly 3,000 residents would be displaced as a result of the modified project.

Nevertheless, on October 1, 1969, the presiding judge issued an "Initial Decision" which concluded that a license should be granted to APCO for the modified Blue Ridge Project. Due to objections voiced by the States of Virginia, West Virginia, and North Carolina, additional hearings were held. Testimony against the project was heard from the Conservation Council of Virginia, the West Virginia Natural Resources Council, the Izaak Walton League, the Congress for Appalachian Development, Ashe and Alleghany counties, North Carolina, the Alleghany Farm Bureau, and the North Carolina Farm Bureau. Following the hearings and the filing of the initial environmental impact statement, the judge issued a "Supplemental Initial Decision" on June 21, 1971, stating: "the proposed project provides comprehensive development of the river reach with the maximum public benefits that can be supported within the limits of economic feasiblity, including flood control, water quality, storage, recreation, pollution control, aesthetics, fishery and power." Two modifications were, however, imposed on the project. First, the downstream release rate was reduced by about 1,000 cfs and, secondly, a maximum drawdown limit for the upper reservoir was set at ten feet at all times after 1985.

Based on the 1972 Court of Appeals decision, Greene County Planning Board v. FPC concerning the requirements of the National Environmental Policy Act, it was determined that interested parties must be provided an opportunity for cross-examination of the environmental impact statement "to permit further examination of environmental issues."

Yet a third decision — the "Additional Supplemental Initial Decision" — was issued on January 23, 1974, again recommending licensing of the Blue Ridge Project. The project was modified a second time with the elimination of the water quality storage element, thus reducing the size of the lower reservoir and establishing a permanent drawdown limit of ten feet. Subsequently, in June, 1974, the Federal Power Commission issued an order granting APCO a license for the Modified Blue Ridge Project, effective January 2, 1975. A petition by the State of North Carolina for a rehearing alleging substantive and procedural errors in the final environmental impact statement and the FPC order was denied in August, 1974.

Meanwhile, on March 21, 1974, the General Assembly of North Carolina designated the 4.5-mile stretch of the river, its "Mainstem," to the Virginia border a part of the North Carolina Natural and Scenic River System. It was based on a report developed by the State's Natural, Scenic and Recreational Rivers Committee produced in May, 1971, which indicated that the South Fork of the New River from its headwaters in Boone, N. C. to the Virginia State Line — 89 miles of river length — qualified for inclusion in the State System.

In September of 1974, a detailed study of the South Fork of the New River was initiated by the N. C. Department of Natural and Economic Resources. It was carried out for the purpose of refining criteria of the Natural and Scenic Rivers Program and developing a preliminary management plan for the river. The plan, produced in October, 1974, proposed that 89 miles of river be incorporated into the State System as a Scenic River and that a series of public access points varying in size and scope of recreational facilities be established along the river

corridor. It was intended that the quality of the facilities be low intensity in character, emphasizing canoeing, hiking and primitive camping.

A series of public meetings was held between January and April, 1975, providing residents and local interests with a forum for responding to the State's management plan. During the course of the meetings, three general interest groups emerged. People residing below the dam's proposed high water line had everything to lose and, as a result, favored the Scenic River proposal. Residents and interests from Boone, N. C., located at the southern end of the proposed Scenic River, recognized the economic potential lodged in tourism that might result in the extension of the Scenic River. Caught in the middle were those residents between the backwaters of the dam and Boone who were not affected by the Blue Ridge Project, who had little interest in tourism, and who primarily wanted to maintain their current way of life without effect from outside. Their opposition to the proposed extension of the Scenic River over their properties was voiced strongly at the meetings. As a result, legislators in the area moved to reduce the proposed Scenic River to the 26.5-mile stretch of river which extended from the Virginia State Line upstream to the backwaters of the Blue Ridge Project.

North Carolina Governor James E. Holshouser wrote, on December 11, 1974, to United States Department of Interior Secretary Rogers C. B. Morton, making application for the South Fork of the New River to be designated a Scenic River Area under the federal Wild and Scenic Rivers Act. Also in December, the State of North Carolina appealed the FPC decision, seeking an injunction and relief against licensing of the Blue Ridge Project on the grounds that the action violated procedures of the National Environmental Policy Act. In effect, the 1968 law prohibited the granting of the license while a State petition requesting designation of a river into the National System was being considered. The Court of Appeals issued a stay order delaying the effective date of the license.

A bill to designate 26.5 miles of the New River in North Carolina for study for inclusion under the Federal Wild and Scenic Rivers Act was passed by the U. S. Senate. However, the bill failed to be reported by the House Rules Committee and eventually failed to get the necessary two-thirds vote required with the suspension of the rules.

On May 26, 1975, the North Carolina General Assembly unanimously passed a bill amending the original Act and declaring the 26.5-mile stretch of river from the confluence of Dog Creek to the Virginia State Line a State Scenic River.

In April of the following year, U. S. Department of Interior Secretary Thomas S. Kleppe designated the same stretch of river a part of the National Wild and Scenic River System. Despite this action, the U. S. Court of Appeals upheld the FPC's license to build the Blue Ridge Project. While North Carolina was appealing the decision to the U. S. Supreme Court, anti-dam forces sought to develop legislation which would act specifically to block the Blue Ridge Project.

A bill introduced by North Carolina Representative Neal designed to reaffirm the National Scenic River designation, as well as to prohibit construction of the project, was sent to the floor by the House Rules Committee during the first week of August,1976. The bill overwhelmingly passed the House during the following week by a vote of 311-73. On August 30, 1976, the U. S. Senate approved the legislation 69-16. The issue on the New River, which had endured for fourteen years, ended in early September when President Gerald Ford signed the bill into law.

a chronology of the scenic river issue

63 June—APCO applies to FPC for permit to conduct hydroelectric project study on New River.

64 March—FPC grants study permit to APCO.

65 February—APCO applies to FPC for license to establish a conventional and pumped storage project.

66 Departments of HEW and Interior intervene in License investigations for project.

67 APCO develops "Modified Blue Ridge Project" for enlarged water storage.

68 APCO applies to FPC for Licensing of Modified project.

69 October—"Initial Decision" concludes

The Upper New River Valley Association is formed in opposition to dam project.

State of North Carolina expresses first opposition to project.

Objections by Virginia, West Virginia, and North Carolina open up further hearings.

70

May—preliminary report by N. C. Natural, Scenic, and Recreational Committee indicates that eighty-nine miles of the South Fork New River qualifies for inclusion in state system.

71

June—"Supplemental Initial Decision" again recommends project Licensing with modifications relating to water release rate and drawdown limits.

72

Court of Appeals decision, Greene County Planning Board v. Federal Power Commission, establishes precedent for E.I.S. cross-examination.

73

March—General Assembly of North Carolina designates four miles, the "main-stem", of the New River a part of the State Natural and Scenic River System.

December—N.C. Governor James E. Holshouser makes application to U.S. Department of Interior Sec. Rogers C.B. Morton to designate the South Fork New River a Scenic River Area under the Federal Wild and Scenic Rivers Act.

December—Federal Court of Appeals issues study order delaying the effective date of License due to irregularities in procedure outlined by Environmental Policy Act.

April—U.S. Department of Interior Sec. Thomas S. Kleppe designates 26½ miles of New River part of the National Wild and Scenic River system.

May—N.C. General Assembly unanimously passes bill declaring 26½ miles of New River, from Virginia state line, a State Scenic River.

August—N.C. Representative Neal introduces bill to prohibit construction of APCO project; sent to floor of the House by House Rules Committee.

August—Bill passed by House, 311-73.

August—Bill passed by U.S. Senate, 60-16.

74

January—"Additional supplemental Initial Decision" again recommends APCO License, further project modifications include reduction in size of lower reservoir and permanent drawdown limit of ten feet.

June—License granted to APCO for construction of Modified Blue Ridge project.

75

76

May—U. S. Court of Appeals upholds APCO's License; State of North Carolina appeals decision to U. S. Supreme Court. Anti-dam forces seek specific legislation to block dam.

The fight to preserve the wild New River

Project

New River

Senate Okays River Bill, Don't Be Deceived

GOVERNMENTAL SETTING

The legislation signed into law on September 11, 1976, by President Ford which amended the Wild and Scenic Rivers Act to include the New River and preclude the hydroelectric project reads as follow:

An Act

To amend the Wild and Scenic Rivers Act (82 Stat. 906: 16 U.S.C. 1271), and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that the Wild and Scenic Rivers Act (82 Stat. 905), as amended (16 U.S.C. 1271 et seq.) is amended as follows:

(1) In Section 2 delete "Maine, and that segment of the Wolf River, Wisconsin, which flows through Langlade County," and insert in lieu thereof "Maine; that segment of the Wolf River, Wisconsin, which flows through Langlade County; and that segment of the New River in North Carolina extending from its confluence with Dog Creek downstream approximately 26.5 miles to the Virginia State Line".

(2) In section 7(a), after the third sentence, insert the following: "Any license heretofore or hereafter issued by the Federal Power Commission affecting the New River of North Carolina shall continue to be effective only for that portion of the river which is not included in the National Wild and Scenic Rivers System pursuant to Section 2 of this Act and no project or undertaking so licensed shall be permitted to invade, inundate or otherwise adversely affect such river segment."

Under the Federal Wild and Scenic Rivers Act, there are two methods whereby a river can be designated for management as a scenic river. First, an Act of Congress may authorize the designation and include the expenditure of federal money for its acquisition and development, and the identification of a federal management agency. Second, the Secretary of Interior may authorize the designation of a river to be included in the Federal Act provided the sponsoring state assumes responsibility for its management. Specific procedures and criteria which serve as guidelines for state management in this situation are set out in the national legislation. Regarding the South Fork New River, the second method for designation in the national system has been utilized. Concerning the classification of protected rivers in the Federal Wild and Scenic Rivers Act, a scenic river must be "free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped but accessible in places by roads."

The basic administrative and management conditions for the South Fork New River have been set forth by the North Carolina General Assembly in its natural and scenic river legislation:

1. The Department of Natural and Economic Resources shall prepare a management plan which shall recognize and provide for the protection of the existing undeveloped scenic and pastoral features of the river.
2. The plan shall specifically provide for continued use of the lands adjacent to the river for normal agricultural activities, including but not limited to, cultivation of crops, raising of cattle, growing of trees and other practices necessary to such agricultural pursuits.
3. Acquision of land and interests in land is limited to not more than 400 acres in fee simple and up to 1,500 acres in easements. Easements may not abridge existing water rights.
4. Inclusion of the river in the national system shall be at no cost to the Federal Government. (Money allocated to the State through the Land and Water Conservation Fund is not considered to be in violation of the "at no cost to Federal Government" requirement of Section 2.(a) of Public Law 90-542, Wild and Scenic Rivers Act, as amended through Public Law 93-621.)

More specifically, the criteria established by the General Assembly for the inclusion of rivers in the Natural and Scenic Rivers System indicates more specific management objectives. These criteria have been refined in the *N.C. Natural and Scenic River System Administrative Policies and Procedures* to establish some specific guidelines for development and management.

I. *Boundaries* — of the System shall be the visual horizon or such distance from each shoreline as may be determined to be necessary by the Director, but shall not be less than twenty (20) feet. Provided, that this shall not be construed to authorize the Director to acquire, except by donation or gift, more than 320 acres of land per mile for inclusion within the boundaries.

II. *River Segment Length* — must be no less than one (1) mile.

III. *Water Flow* — shall be sufficient to assure a continuous flow, with a 7-day, 10-year minimum flow of 1.0 cfs., and shall not be subjected to withdrawal or regulation to the extent of substantially altering the natural ecology of the stream. "Substantially altering the natural ecology" is to be interpreted as follows for the two river classifications:

Natural Rivers

A. Maintenance of an infiltration capacity which would approximate that of an undisturbed natural watershed (Infiltration capacity is defined as the rate at which water can infiltrate the soil surface). Such a restriction is required in order to maintain the natural base flow (or ground water flow) which is essential for assuring continous stream flow. Changes in land use, particularly those involving substantial soil exposure and compaction, can be expected to have a critical impact on infiltration capacity.

B. No artificial constriction of the river bed including rock riprap, concrete blocks, retaining walls, rock-filled gabions and pilings.

C. No dredging, sand and gravel operations, etc.

D. Maintenance of the stream in its free-flowing state; no impoundments

Scenic Rivers

A. Largely free of impoundments.

B. Minimum erosion control devices as specified by the State Sediment Control Division. Indigenous construction materials are preferred.

IV. *Water Quality* — shall generally be not less than the minimum required for Class "C" waters as established by the North Carolina Board of Water and Air Resources. Such Water is suitable for fish and wildlife propagation, boating, wading and other uses requiring water of lower quality, but *not* for such uses as bathing, and as a source of water supply for drinking, culinary or food processing purposes. Specifically, the water quality standards for both natural and scenic rivers are as follows:

A. *Floating Solids, Settleable Solids, and Sludge Deposits*
Only such amounts attributable to sewage, industrial wastes or other wastes as will not, after reasonable opportunity for dilution and mixture of same with the receiving waters, make the waters unsafe or unsuitable for fish and wildlife, or impair the waters for any other best usage established for this class.

B. *Nonfilterable (suspended) residue*
For the protection of trout spawning grounds, a water quality standard of 25 mg/l organic and inorganic particulate matter should be maintained for trout water. For free-flowing streams not designated as "trout waters," the maximum allowable limit is 80 mg/l of nonfilterable residue. Impounded and saline waters should have a maximum concentration not exceeding 80 mg/l , but lower concentrations than those of free-flowing streams within the same region are preferred.

C. *pH*
Shall be normal for the waters in the area, which generally shall range between 6.0 and 8.5, except that swamp waters may have a low of 4.3.

D. *Dissolved oxygen*
Not less than 6.0 mg/l for natural trout waters; 5.0 mg/l for put-and-take trout waters; not less than a daily average of 5.0 mg/l with a minimum of not less than 4.0 mg/l for non-trout waters, except that swamp waters may have lower values if caused by natural conditions.

E. *Toxic wastes, oils, deleterious substances, colored or other wastes*
Only such amounts, whether alone or in combination with other substances or wastes as will not render the water injurious to fish and wildlife or adversely affect the palatability of same, or impair the waters for any other best usage established for this class.

F. *Organisms of coliform group*
Fecal coliforms not to exceed a log mean of 1,000/100 ml (MPN or MF count) based upon at least five consecutive samples examined during any 30-day period; nor exceed 2,000/100 ml in more than 20 percent of the samples examined during such period. (Not applicable during or immediately following periods of rainfall.)

G. *Temperature*
Not to exceed 5°F. above the natural water temperature, and in no case to exceed 84°F. for mountain and upper piedmont waters and 90°F. for lower piedmont and coastal plain waters. The temperature of natural trout waters shall not be significantly increased due to the discharge of heated liquids and shall not exceed 68°F.; however, the temperature of put-and-take trout waters may be increased by as much as 3°F. but the maximum may not exceed 70°F.

V. *Public Access*
Natural Rivers
A. Access shall be limited to trails; motorized vehicles shall not be visible.
B. Ambient noise levels generated by automobiles or other ground level activity shall not exceed forty dbA on the river.

Scenic Rivers
A. Parallel roads and water crossings shall be allowable for motorized vehicles, but should be well screened where possible.

VI. *Environmental Quality*
Natural Rivers
A. Natural rivers shall have essentially primitive landscapes, preferably old growth timber.
B. Abandoned pasture, old field succession areas (including early stages), old burns, and relatively unobtrusive forest management activity areas can be allowed.
Scenic Rivers
A. Scenic rivers shall be largely undeveloped pastoral, and/or forested landscapes characterized by dispersed agricultural uses and rural dwellings or settlements, including low density vacation homes.
B. Occasional utility easements, perpendicular to the river course, shall be acquired.
C. Elements such as dense vegetation, cliffs, bluffs, rock outcrops, springs, waterfalls, peaks, and attractive vistas shall augment the importance of scenic river segments.

The state agency given the responsibility for developing plans and operating the Scenic River Area is the Division of Parks and Recreation, N. C. Department of Natural and Economic Resources. This Division is responsible for acquiring, developing, and operating State Parks, Natural Areas, Recreation Areas, Natural and Scenic Rivers, and State Trails throughout North Carolina. Furthermore, the principles upon

which the Scenic River Area is managed will be based largely on the overall purposes of that system:

To serve the people of North Carolina and their visitors by:

1. Preserving certain rivers of North Carolina that possess outstanding natural, scenic, educational, geological, recreational, historic, fish and wildlife, scientific and cultural values of great present and future benefit to the people.
2. Providing a rational balance between the conduct of man and the preservation of the natural beauty along many rivers of the State.
3. Retaining the natural and scenic conditions in some of the State's valuable rivers by maintaining them in a free-flowing state and to protect their water quality and adjacent lands by retaining these natural and scenic conditions.

It is anticipated, however, that the State will participate in cost-sharing programs with the Federal Government for both land acquisition and capital improvements. Programs available at the Federal level related to parks and recreation include the Land and Water Conservation Fund Act, Bureau of Outdoor Recreation, and Resource Conservation and Development Act, Soil Conservation Service. Indeed, the RC&D program, which is developed and managed largely at the local level, is responsible for a great number of projects relating to environmental improvements. This activity occurs through the joint efforts of the Soil Conservation Service and local RC&D Councils.

A project plan prepared by the New River Valley RC&D Council of North Carolina and Virginia was prepared in 1974 and updated in 1976. Those proposed projects included the development of subdivision regulations for both Ashe and Alleghany Counties and a sediment control ordinance for Alleghany County.

Ashe County, Alleghany County, and the Region D Council of Government represent the local government units having jurisdiction in the area of the Scenic River. In addition, nearby towns including Jefferson, West Jefferson, and Sparta have jurisdiction within this area. At this time, neither county has adopted a zoning ordinance or subdivision regulations. Government regulation of land use is largely limited to State building and health codes.

Land-use planning has been undertaken by a few of the municipalities within the New River area, but implementation of these plans has not been fully successful. Most of the counties within the valley have considered land-use plans, but due to citizen opposition none have yet been adopted. Although there has been limited success with the adoption of land use controls in Ashe and Alleghany Counties, there have been some achievements in this area. Sparta, the largest town in Alleghany County, is enforcing the State building code. Alleghany County's Board of Commissioners has stated publicly that it will adopt a floodplain ordinance to control the section of the New River flowing through Alleghany County. Although not directly related to this site, Ashe County is enforcing a countywide building code and monitoring development in designated flood potential areas throughout the county to comply with HUD's Flood Insurance Program. A countywide zoning ordinance for Ashe County has been prepared and is being studied by the County Commissioners. If a countywide zoning ordinance is not adopted, the Commissioners intend to adopt a floodplain ordinance to protect the New River.


ACCESS AND
PHYSIOGRAPHY

ACCESS

The South Fork New River area is in the extreme northwest corner of North Carolina on the western side of the eastern Continental Divide. Mount Jefferson State Park is approximately sixteen miles from Tennessee and thirteen miles from Virginia, while the 26.5-mile segment of the South Fork New River Scenic River runs from the North Carolina/Virginia State Line, close to Mouth of Wilson, Virginia, to about four miles east of Mount Jefferson State Park.

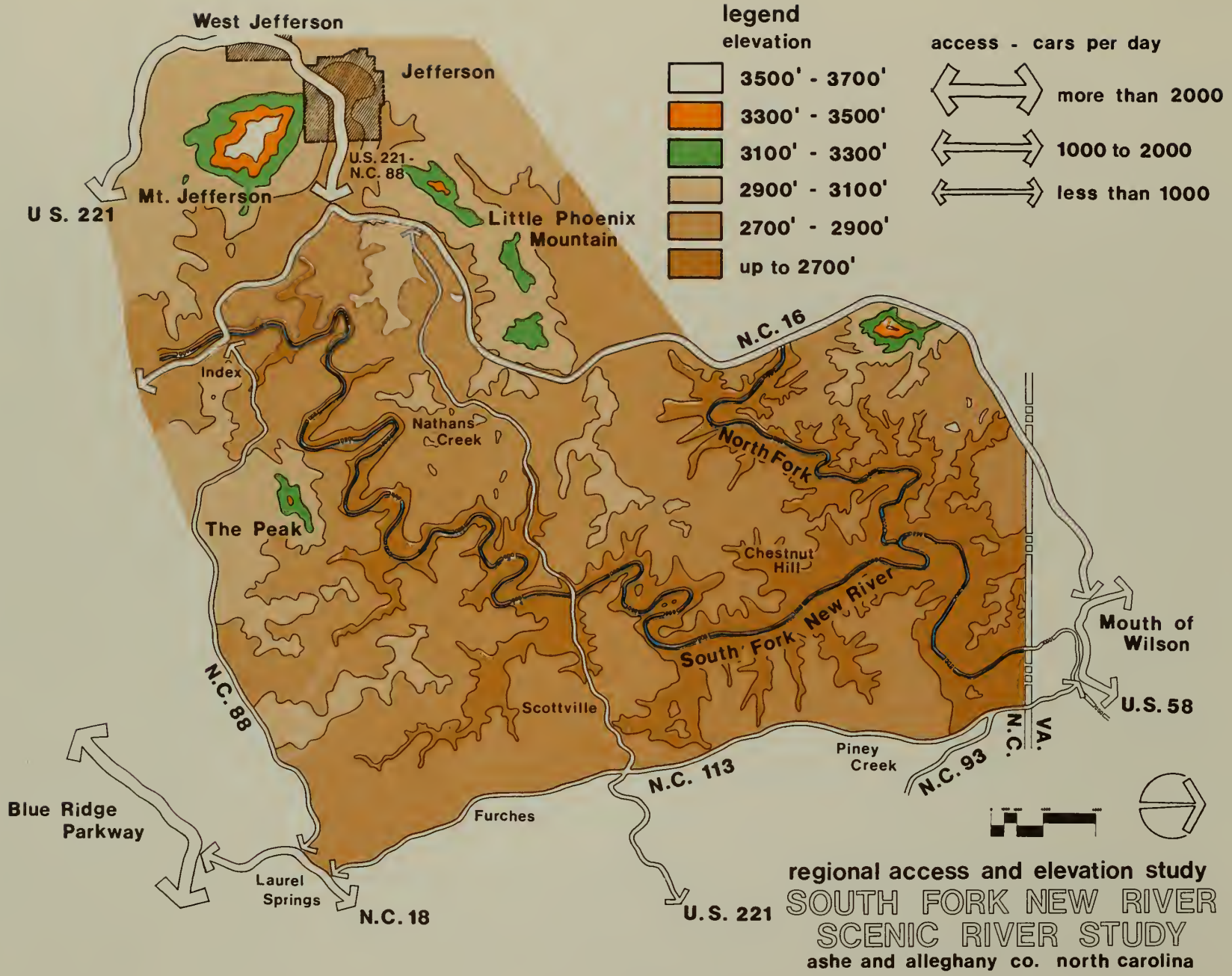
The entire area is mountainous with generally steep, forested slopes except on some of the ridgetops and floodplains. The river valleys range from broad and rolling to narrow and steep with rural/agricultural uses on the more acceptable slopes. This mixture of terrain types limits the access routes through the area to certain passes and along the flatter ridges and valley floors. Federal access routes serving the region are U. S. Highways 421, 221 and 21 in North Carolina, and U. S. 221, 58 and 21 in Virginia. The Blue Ridge Parkway roughly parallels the New River along the ridges to the southeast. North Carolina access routes both along and across the Scenic River and providing access to the State Park vicinity are N. C. Highways 16, 18, 88, 93, 113 and 194.

In addition to these major routes, numerous N. C. Secondary Roads (both paved and unpaved), private roads and jeep trails are used for access. Alternative transportation methods serving this area include the Norfolk and Western Railway at West Jefferson, commercial buses, and air traffic, although the closest scheduled airline stop is apparently at Hickory, 48 miles away, with another at Winston-Salem, 75 miles away. A new airport runway is currently under construction at Jefferson, within sight of the mountaintop park.

In a straight-line distance, Mount Jefferson State Park is only twenty-three miles from Stone Mountain State Park, and only twenty-two miles from the northern boundary of the U. S. Forest Service's Pisgah National Forest in North Carolina and sixteen miles from the Cherokee National Forest in Tennessee and Virginia.

Within the immediate area, N. C. Highway 16 is the main road running north and, generally, parallel to the river. Passing south of Jefferson and West Jefferson, Highway 16 carries an average of 1,300 cars daily. It acts as the main collector of east-west traffic from U. S. Highway 221 and N. C. 88 within the area, distributes traffic north to U. S. 58 — Mouth of Wilson and south to U. S. 421 — Wilkesboro and Jefferson/West Jefferson. Other main collector roads in the area include U. S. 58 in Virginia which runs east-west, parallel to the North Carolina State Line, through Independence, Mouth of Wilson, and Damascus. Also, N. C. 18 is a main collector running north-south from Sparta through Laurel Springs and on to Wilkesboro. U. S. Highway 221 and N. C. 88 are the primary east-west arteries serving the area, crossing the Blue Ridge Parkway and the river. Their average daily traffic volume is less than 1,000 cars per day.

Where N. C. Highways 88, 16, and U. S. 221 converge south of Jefferson, Highways 88 and 221 join and run west into the town taking on the function of a principal access road. Where the road moves through the town, and U. S. 221 on through West Jefferson, the average volume of traffic is about 5,000 cars daily. The only other principle access road is the Blue Ridge Parkway, which averages about 4,500 cars daily at the N. C. 18 exit.



regional access and elevation study

SOUTH FORK NEW RIVER SCENIC RIVER STUDY

ashe and alleghany co. north carolina

TOPOGRAPHY

The New River watershed occupies 770 square miles in North Carolina and lies within the Blue Ridge province of the Appalachian Mountain system. The South Fork of the New River is situated on a plateau in the province which is elevated, generally, between 2,500 and 3,000 feet above sea level. Mount Jefferson State Park, which is located on the highest point in the area, is approximately 4,700 feet in elevation.

The long reaches and abrupt meanders of the New River are contained by land forms which are characterized by predominantly steep valley walls, relatively narrow floodplain, and a complex, fragmented ridge system. Those steep slopes which have not been left in timber (about 50 percent) are either being managed for white pine plantations or are in pasture. Most of the floodplains are being cultivated for row crops, are in pasture, or are fallow fields.

An important land form in the area is Little Phoenix Mountain, a long ridge system beginning at Jefferson and extending northeast to the river near the U. S. 221 crossing, about eight miles in length. Like other prominent features in the area, Little Phoenix Mountain is steep-sided and reaches an elevation exceeding 3,600 feet. It forms the visual horizon to the north from Jefferson and the upstream reaches of the river.

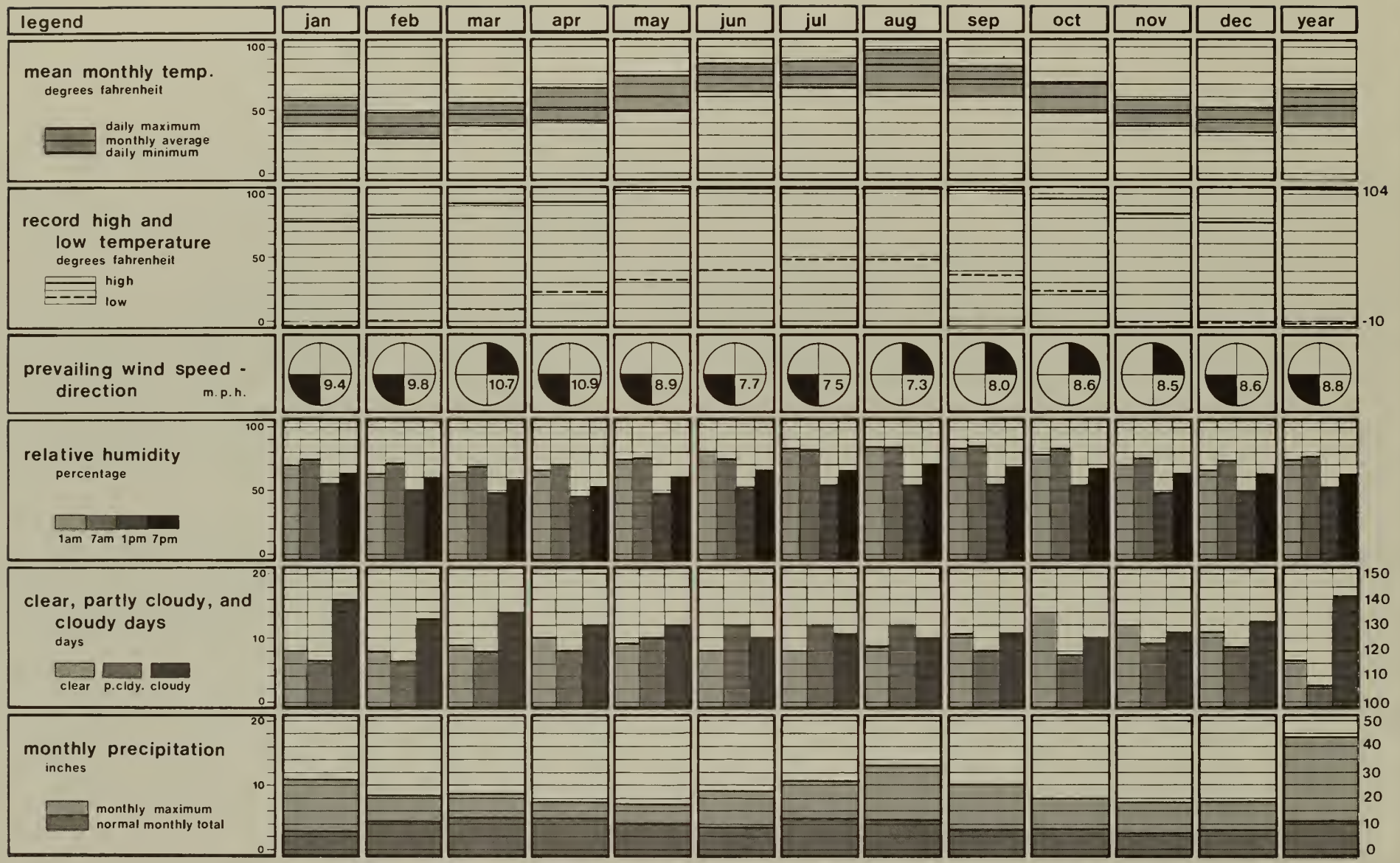
A third important topographic feature is The Peak, an isolated mountain overlooking the New River from the east, about eight miles upstream from the U. S. 221 crossing. Its summit lies within 4,000 feet of the river so that, at this point, there is a difference in elevation of more than 1,200 feet. The Peak dominates the view to the east from many points, but none more dramatic than from the river at the foot of the mountain.

CLIMATE

All climate data were interpolated from the two weather stations operated by the U. S. Department of Commerce in Jefferson and Winston-Salem. The weather information available for the two stations is similar, but the data from Winston-Salem are much more comprehensive. Therefore, most of the information related here will be from the Winston-Salem location. However, microclimate conditions greatly affect the potential for recreation satisfaction derived by the public, and are subject to specific site analysis.

In general, temperature at a site will be influenced by aspect, exposure, elevation, air movement, vegetation cover, cloud cover, soil moisture, and amount of radiation. A large spread between mean daily high temperature and mean daily low temperature places a severe limiting factor on recreation satisfaction. With regard to this aspect, east slopes receive the morning sunshine, and are shaded in the afternoon, a factor essential for maximum satisfaction in camping areas. The amount of energy radiating from the ground will influence temperature and recreation satisfaction. May, June, and July are the relatively cloud-free months, having the highest radiation figures and resulting in warmer micro-site conditions. December, January, and February, on the other hand, have colder microclimate conditions.

The normal annual precipitation varies in the New River Valley from 44 inches near the North Carolina/Virginia Line to


legend
jan
feb
mar
apr
may
jun
jul
aug
sep
oct
nov
dec
year
mean monthly temp.
degrees fahrenheit
daily maximum
monthly average
daily minimum
100
50
0
record high and low temperature
degrees fahrenheit
high
low
104
-10
prevailing wind speed - direction
m.p.h.
9.4
9.8
10.7
10.9
8.9
7.7
7.5
7.3
8.0
8.6
8.5
8.6
8.8
relative humidity
percentage
1am 7am 1pm 7pm
clear, partly cloudy, and cloudy days
days
clear p.cldy. cloudy
20
10
0
150
140
130
120
110
100
monthly precipitation
inches
monthly maximum
normal monthly total
50
40
30
20
10
0

about 48 inches at Jefferson. The precipitation is generally distributed throughout the year with no extremely dry or wet months. Peak rainfall is experienced in August with the driest months being November and December. Most of the precipitation occurs mainly in the form of rainfall; however, winter snowfalls frequently account for a large percent of the moisture. The quantity of snow received varies widely with the higher elevations generally receiving a greater amount than the lower areas. The average annual snowfall is approximately 21 inches.

Temperature varies widely along the river and at Mount Jefferson. The higher elevations normally have the colder temperatures. However, on many cold clear nights the lower coves and valleys may actually become colder than the ridges as the heavier cold air descends the mountain slopes to the lower lying areas. Average January temperatures vary from 36°F to 40°F. Average July temperatures vary from about 68°F to 74°F. A minimum temperature of -20°F and a maximum of 97°F have been recorded at Jefferson. The growing season length in the project area ranges from 150 to 190 days depending on elevation.

Air drainage and wind speed influence the air quality for an area. Cold air sinks to lower levels, and often collects large amounts of humidity, resulting in night time smog at times of minimal wind. The prevailing winds are out of the southeast at a moderate 8.8 mph. The winds are out of the northeast during August, September, October, and November at about 8 mph. The wind velocity reaches a peak during March and April averaging 10.8 mph but is highly variable in direction.

GEOLOGY

The New River, prior to glacial activity, formed the headwaters for the ancient Teays River. The Teays, which was already mature by the time the Appalachian Mountains were formed, was a huge river. Both the Mississippi and Ohio Rivers were once tributaries of the Teays which, according to Dr. Raymond E. Janssen of Marshall University, ". . . began in the southwestern edge of Ashe County (North Carolina) to Gauley Bridge, West Virginia, along the present bed of the New River, to where the New River unites with Gauley River to form the Kanawha. The Teays followed the bed of the Kanawha to Charleston, West Virginia, and ran thence in a northwesterly direction to a point beyond Fort Wayne, Indiana, thence almost due west to Lincoln, Illinois, where it was joined by the Mississippi. At this point the Teays turned south to empty into an embayment of the Gulf of Mexico, which at that time extended to a point near St. Louis, Missouri, where the Illinois River now meets the Mississippi." The glaciers which moved as far south as southern Illinois never reached North Carolina and, as a result, did not affect the course of the New River. Therefore, the present river channel is essentially the same as in prehistoric times and is actually part of one of the oldest river systems in North America.

During periods of glacial recession new river channels formed to replace northern reaches of the Teays River which had been buried under tons of earth. Following the original drainage pattern as much as possible, the New River eventually established a channel to the newly formed Ohio River.



PROGRAM STUDY

POPULATION

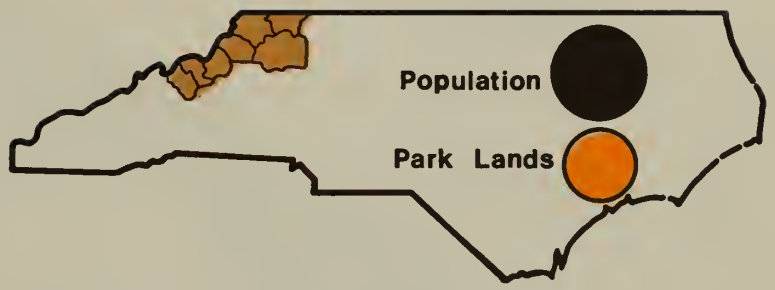
North Carolina's seven-county Northwest Mountains Region (Region D) is generally characterized by a rural population with relatively small towns of less than 5,000 people each. Employment, however, is mostly non-agricultural with over one-half of the employed labor force engaged in manufacturing, trade or service occupations.

With approximately 58 persons per square mile, this region is one of the least densely populated regions in the State. However, the population growth rate in recent years has been 50 percent greater than that for the State as a whole. In 1973, 146,700 persons lived within the region with an average annual increase of 1.6 percent. Thus, the 1980 projected population is 163,940 and the 1986 population will approximate 180,321. This increasing population trend is opposite the general trend of net outmigration prior to 1970.

Over 800,000 persons in four states live within 50 miles of the designated portion of the New River. Of this total, about 418,000 (8.2 percent of the state's total) are North Carolinians. Though primarily rural in character, a number of small metropolitan areas are located in this general vicinity, including: Boone, Morganton, Lenoir, Hickory, Statesville, and Mount Airy, North Carolina; Johnston City and Bristol, Tennessee; Pulaski and Bristol, Virginia, and Bluefield, West Virginia.

RECREATION SUPPLY

State Parks and Recreation Areas bear a substantial portion of the burden for meeting citizens' needs for outdoor recreation opportunities. Currently, there are only about 15 acres of State Park land per thousand population, statewide. In the Northwest Mountain Region of North Carolina, however, there is over five times as much available state-owned park land. Even when proportions of users from more populous adjacent regions are allocated to the various parks in this region, the adopted state standard of 20 acres per thousand population is approached.



North Carolina and the Northwest Mountain Region





regional public recreation supply

And, presently proposed additions are expected to keep pace with the increasing population. Thus, the Northwest Mountain Region benefits from a relatively ample supply of State Park lands, although developed facilities are notably deficient.

Existing State recreation opportunities within the region include three State Parks and a Scenic River. Mount Jefferson State Park is comprised of 540 acres with picnicking and hiking trails. Stone Mountain, in Alleghany and Wilkes Counties, has over 10,000 acres with picnicking, hiking, and camping. Mount Mitchell State Park in Yancey County has similar facilities including a small tent campground (7 sites), plus an observation tower and restaurant. The New River, a State and National Scenic River in Ashe and Alleghany Counties, is in its initial land acquisition phase with up to 400 acres proposed, plus 1,500 acres of easements. In addition, about 65,000 acres of non-park gamelands are managed by the N. C. Wildlife Resources Commission within the region.

The entire Northwest Mountain Region of North Carolina is pervaded by the Blue Ridge Parkway and its supporting system of scenic sites, trails, activity centers, and campgrounds. National Forest lands are a dominating factor in the southern part of the region. Also important are the ski resorts which have been developed since the early 1960's, with the accompaniment of a number of amusement and novelty attractions, and a veritable boom in vacation homes. Several State Gamelands, State Parks, and a number of county and community parks also play an important role in providing recreation opportunities for the people of the region as well as visitors.

The Blue Ridge Parkway serves as a major route channeling recreationists into the region. Six major recreation and park areas are associated with the Parkway, involving almost 15,000 acres. These areas provide a number of activities including hiking, picnicking, fishing and a large number of campsites. In addition, the Parkway itself consists of over 10,000 acres with numerous scenic overlooks and other facilities.

Pisgah National Forest includes a considerable proportion of land in Yancey, Mitchell, Avery, and Watauga Counties, and contains several recreation areas comprised of over 2,100 acres with picnicking, hiking trails, and 109 campsites. Most of these facilities occur in Mitchell and Yancey Counties.

Nine county parks exist in the region, one each in Ashe, Alleghany, Watauga, and Mitchell Counties and five in Wilkes County. In addition, the towns of Boone, Blowing Rock, Spruce Pine, and North Wilkesboro each have a municipal park.

Eight ski resorts are located in the region, five of which are in Watauga County. In addition to snow skiing, these resorts generally have associated tennis, golf, horseback riding, swimming and vacation homes.

Amusement and novelty resorts are abundantly distributed throughout the region. They include: Tweetsie Railroad, Mystery Hill, and Blowing Rock in Watauga County; Grandfather Mountain and Land of Oz in Avery County; Powderhorn Mountain Rodeo in Wilkes County.

Private enterprise also operates several summer youth camps serving the entire Southeast. Three such camps are located in Watauga and Avery Counties while one is located in Alleghany.

At least 36 commercial campgrounds currently exist within the region. Use occurs in the late spring through early fall coincidentally with most people's vacation periods and the time when the mountains have the most to offer — coolness or change of season, color, and variety. Avery, Yancey, and Watauga Counties have a large concentration of campgrounds, primarily dispersed along the major tourist routes; however, one campground is directly related to the New Scenic River. Twin Forks Campground, with two dozen campsites and a canoe launch, is located on the South Fork of the New River near the confluence of the North and South Forks.

Elk Shoals Camp is a Methodist Church related camp totaling 310 acres with three miles of frontage on the New River upstream of the 26.5-mile area. Facilities include cabins, group picnicking, and a swimming beach.



RECREATION DEMAND

Demand for outdoor recreation activity is increasing steadily, both in the nation and in North Carolina. Such demand is directly proportional to three primary factors: population, income, and leisure time. All three factors currently show positive trends. Statewide, the human population is increasing 1.1 percent annually. This could mean an increase of approximately 630,000 people by 1986. Meanwhile, incomes and leisure time are increasing at the annual rates of 2.5 percent and 0.5 percent, respectively. Thus, demand for outdoor recreation in North Carolina is expected to continue its upward trend.

Attitudes concerning the adequacy of outdoor recreation facilities and the desires for outdoor recreation opportunities are varied. The age groups for which existing facilites are felt to be the least satisfactory are, in descending order of magnitude, ages 13 to 19, 65 and older, and ages 1 to 12. Less than 19 percent of all North Carolinians feel that outdoor recreation opportunities for any age group are "very satisfactory."

Most people feel that if facilities were closer to them, allowing easier access, their participation in outdoor recreation would increase significantly. In response to the question, "what one change would most affect your outdoor recreation participation?", 31.1 percent indicated closer facilities with easier access. Other responses and the percent responding were: 1) more leisure time — 28.6 percent, 2) higher income — 23.1 percent and, 3) improved facilities — 6.8 percent. A small number — 4.5 percent of those responding — feel that nothing would change their rate of participation.

Adding to North Carolina's recreation needs are out-of-state visitors. One-third of these out-of-state visitors originate from the Northeast and North Central regions. Another one-third comes from our four bordering states. In 1975, 5.37 million persons from beyond our state borders engaged in outdoor recreation activities in North Carolina. Of this number 1.5

million were campers of one sort or another. However, the projected outdoor recreation participation rate in terms of visitor-days is 59 percent for in-state residents versus only 41 percent for out-of-state visitors.

Participation rates vary widely among the various outdoor recreation activities. The N. C. State Comprehensive Outdoor Recreation Plan has established the relative participation rates (demand) of 34 outdoor recreation activities. Those which were determined to have at least some potential for the New River were each examined for their desirability, feasibility, and appropriateness. The latter activities and their relative demand are graphically illustrated in the accompanying figure.

Of the 34 most prevalent outdoor recreation activities in North Carolina, 13 were considered as having at least some possibilities for the Scenic River, with the addition of rafting and tubing.

Picnicking was regarded as having medium potential for development in the region, according to SCS appraisals which considered natural resources, people of the region and the facilities necessary for development. This particular activity is the most popular in North Carolina State Parks. Both family and group picnicking were considered in this appraisal.

Pleasure driving and sightseeing each have outstanding potential along the river. Eighty-five percent of the river is paralleled by public roads, with numerous scenic vistas.

The demand for swimming opportunities is increasing very rapidly and is expected to increase in the future. The Scenic River does provide some potential for swimming in a natural setting.

Fishing is ranked ninth statewide, in terms of activity days. Its popularity has increased more than any other N. C. Park activity during the last five years — over 90 percent. In this region, cold water trout fishing is particularly popular. However, though the river habitat is considered excellent, there is some room for improvement through a more extensive stocking and management program.

Camping is considered to have relatively high development potential within the region. Over the last five years, this activity has increased 35 percent in North Carolina State Parks. Vacation family tent and trailer camping ranks at the top as far as potential, while transient camping is of much less significance. Canoe camping offers possibilities along the river, while hike-in wilderness camping was also considered as having potential. Demand for group tent camping is also apparent. Vacation cabins are considered to have high potential throughout the region but are probably not appropriate with the profusion of private cabins available in various mountain resorts in the vicinity.

Horseback riding (ranked 19th) and bicycling (16th) both have considerable potential along the banks of the Scenic River. Existing paved roads along the river lend themselves especially well to bicycling while unimproved roads could be used for riding.

Canoeing (ranked 27th) is one of the most popular river activities, and perhaps the most satisfactory way of touring the Scenic River. Other related activities include, floating with rubber rafts and tubing in rubber inner tubes during spring, summer, and early autumn months.

Nature walking (ranked 7th) and hiking (ranked 30th) offer substantial potential along the New River. A broad array of trails from backpacking trails to interpretive trails for the blind were considered appropriate. Associated with nature and canoe trails are bird watching (ranked 10th) and wildlife photography (ranked 28th).

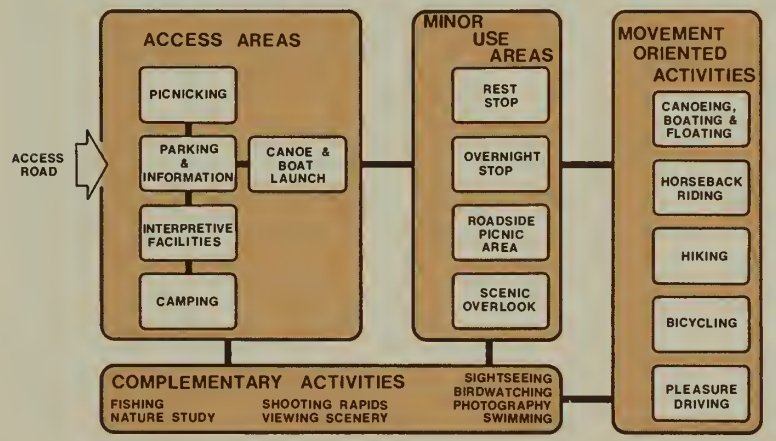
Thus, the Scenic River affords a broad array of potential recreation opportunities while simultaneously providing the opportunity for preserving substantial acreage in its existing and/or pastoral state.

SCENIC RIVER RECREATION PROGRAM

A recreation program for the New River distinguishes between movement-oriented activities and site-oriented activities. One of the best ways to experience the natural and scenic features of the river corridor is by moving through it. Such movement-oriented activities include pleasure driving and backpacking, horseback riding, canoeing or boating, and rafting or floating. Site-oriented activities such as camping or picnicking offer an alternative type of experience for the visitor complementing the movement-oriented activities.

Wherever public roads parallel the river, it is suggested that they be considered for designation as scenic roads, providing scenic drives and sightseeing opportunities for visitors. Overlooks, roadside picnic areas, and tent and trailer campsites at variable locations are possible complementary facilities.

SCENIC RIVER RECREATION PROGRAM RELATIONSHIPS



Bicycle trails could be developed in conjunction with scenic roads (Class II or III bicycle trails). Only where a connector is required between two separate roads could a separate bike path (Class I bicycle trail) be considered. Support facilities would include stopping or rest areas in conjunction with roadside picnic areas or overlooks. In some situations, it may also be feasible to combine bicycle rest stops with those for other activities. It is recommended that rest stops be only several miles apart. Overnight camping facilities should be at intervals of 25-40 miles, again in conjunction with those for other activities.

Hiking primarily consists of foot travel on trails which can be traversed in one day or less. Such pleasure-hikes generally range from a couple of miles to an absolute maximum of twenty miles. Ideally, they should be loop trails. Nature walking, wildlife photography, day-hike picnics, bank fishing, sightseeing and viewing scenery, and even swimming are some of the activities that will complement hiking.

Shorter loop trails of one-half to two miles will be utilized for interpretive purposes. Generally, these will be self-guided trails, emanating from an interpretive center, parking areas, or other use areas.

Backpacking trails will generally have a linear relationship with most or all of the length of a scenic river. Designated primitive campsites will be provided at backpacking intervals of at least one day. These intervals would generally range from 5-12 miles, dependent upon the local physiography and user needs. Rest stops will be located at half-day hiking intervals. Activities which complement backpacking include nature study, wildlife, photography, bank fishing, swimming and viewing scenery.

Horseback riding also has a basically linear relationship with the river. Loop trails, however, should also be included. Over-

night facilities similar to those for backpacking, should be provided at 30-40 mile intervals, but there will also be a need for the addition of tie racks for the horses. These camping facilities can even be shared with backpackers, canoeists, etc. Horse trails will not be considered compatible with any foot trails.

Boating or floating on scenic rivers involves everything from white water kayaking to power boats, including canoes, rubber rafts, inner tubes, rowboats, electric motorboats, and where sufficient depth allows, even outboard motorboats. While the noise factor of the latter is considerable, such use is recognized as a means of recreational transportation, particularly on the relatively deep, slow moving rivers of the coastal plain. Like backpacking and horseback riding, water-based activities will have overnight accommodations, preferably in conjunction with these primary land based activities. Intervals should range from 10 to 20 miles, dependent on the river gradient and flow. Rest stops will be located along each segment. Complementary activities will include boat fishing, "shooting rapids," wildlife photography, sightseeing and viewing scenery.

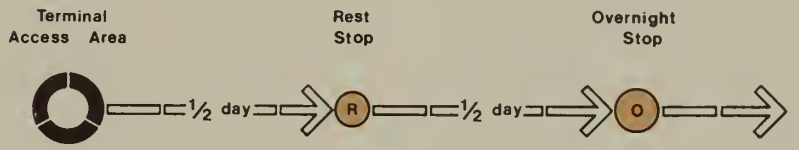
The designated rest stops or minor use areas for all of the primary activities along a scenic river would generally have minimal facilities. These include picnic tables, grills, water and toilets.

Overnight stops will include tent pads in addition to the aforementioned facilities provided at rest stops. Where use is heavy, Adirondack-type shelters of rustic character may be provided.

Normally, access to the river corridor will be provided at or near the beginning and ending of the designated scenic river section. In some instances, additional access may be provided, particularly for relatively lengthy scenic river sections.

Generally, access areas will provide varying degrees of information services, vehicular parking, and canoe or boat launch and take-out facilities for water-based recreation. They will also serve as trailheads for hikers, backpackers, and horseback riders. In addition, picnicking, camping and interpretive facilities will be provided. Only one primary access area for a scenic river will include administrative offices.

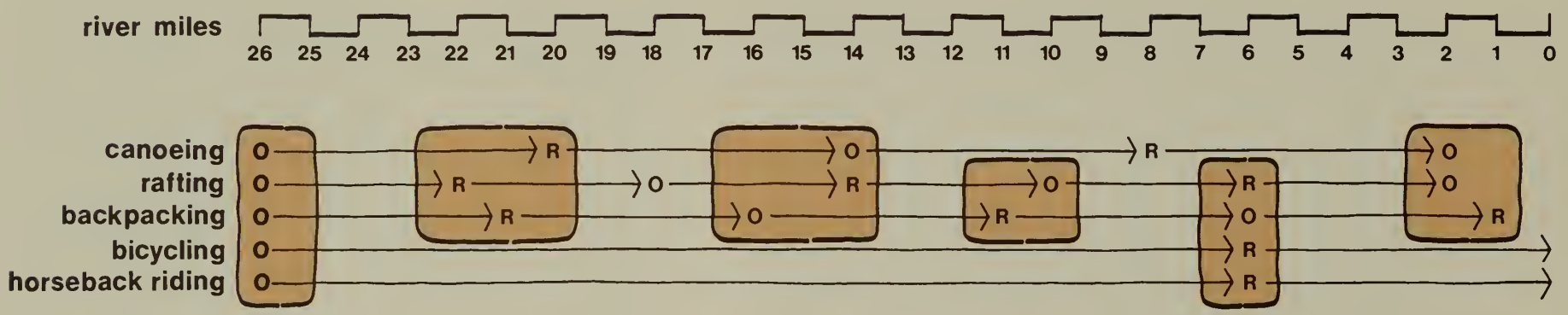
The implication of this general scenic river program is the distribution of services and facilities into developed access or use areas based on the time-distance requirements for movement activities. Furthermore, distances between necessary services and facilities are determined for each individual movement activity in relation to half-day and full-day time increments from either terminus. For example, overnight facilities will be



Time - Distance Concept

TIME-DISTANCE RELATIONSHIPS FOR MOVEMEMENT ACTIVITIES

legend
rest stop - R
overnight stop - O



TERMINAL ACCESS AREA

Vehicular Access

Camping

Family and Group Picnicking

Trail/Watercraft Access

Information/Interpretive Facilities

REST STOP

Picnic/Rest Stop

Primitive Camping

INTERMEDIATE ACCESS AREA

Vehicular Access/Parking

Camping

Family and Group Picnicking

Trail/Watercraft Access

Information/Interpretive Facilities

REST STOP

Picnic/Rest Stop

Primitive Camping

INTERMEDIATE ACCESS AREA

Vehicular Access/Parking

Camping

Family and Group Picnicking

Trail/Watercraft Access

Informational/Interpretive Facilities

TERMINAL ACCESS AREA

Vehicular Access Parking

Camping

Family and Group Picnicking

Trail/Watercraft Access

Informational/Interpretive Facilities

provided at one-day hiking intervals for backpackers, and rest stops at half-day intervals. Distance between facilities, thus, depends on the average distance that backpackers can be expected to walk in a half-day or full day.

Generally, a pattern of overlapping requirements for different activities occurs when applied to a particular stream. Consequently, the size and scope of the access area depends on the degree of overlapping needs. Whenever requirements for several activites coincide, a major access area must be provided. Where facilities are required for only one or two activities, a relatively minor use area is in order. These areas are in addition to the terminal access area.

Application of these criteria to a river with physical characteristics similar to those of the New River corridor suggests the following time-distance relationships:

Movement-Oriented Activity	Ideal Distance Rest Stop	Increments Overnight Use Area
Canoeing	6 mi.	12 mi.
Rafting or Floating	4 mi.	8 mi.
Hiking/Backpacking	5 mi.	10 mi.
Horseback Riding	20 mi.	40 mi.
Bicycling	20 mi.	40 mi.
Pleasure Driving	Variable	Variable

By relating these distance increments to the New River in a linear format, an overlap pattern emerges which suggests four access or use areas between the two terminal access areas. Two of these intermediate areas would be relatively minor.

It must be anticipated, however, that the existence of suitable sites in all of the prescribed locations is not very probable. Site constraints, as well as other problems, may necessitate a site location variance of up to two miles up or down the river. It may even be advantageous to combine sites in certain instances.

A typical access area with all of the services and facilities previously discussed will normally require approximately 120 acres. A minor use area or rest stop with limited facilities may require only 20 acres or less.

REGIONAL CONCEPT

The analysis of physical features, cultural conditions and trends at a regional scale enables the development of an overall concept for public recreation within which the scenic river program is the primary component. The intent of the regional concept is to indicate a desirable physical and programmatic relationship between proposed and existing facilities at a general level.

The New River represents an outstanding addition to an already excellent existing recreation resource base in northwestern North Carolina. Abundant privately owned and operated recreation facilities complement a profusion of state and federally operated facilities. Two State Parks, as well as the Blue Ridge Parkway, are in close proximity to the river. Mount Jefferson State Park is within five miles of the river, while Stone Mountain is less than twenty miles east. The Parkway is also just a few miles east, between the river and Stone Mountain.

These relationships present the potential of linking together the government operated sites with hiking and/or horseback trails. Private recreation developments, in turn, could be linked to the park connector trails, forming a regional trail system. This potential is explored in a study of regional trail corridors in relation to general site locations on the Scenic River.

The application of the scenic river program criteria to the New River suggests the need for a total of six access areas along the river including terminal areas. The location of these sites is generalized at this point in the study to allow for specific site choices dependent on discrete physical and management conditions. Site 1, the southernmost terminal access point, is located at the beginning of the designated Scenic River and may be accessible from N. C. 88, east of the river, and U. S. 221 to the north. The area bears a strong relationship to Mount Jefferson State Park. Two potential corridors were observed which would act to link the State Park and Site 1. One corridor extends south from the park five miles to the New River near the N. C. 88/16 bridge, and follows the river north for about two

miles, joining the Scenic River at river mile 26.5. The alternative corridor travels north from the Park through the town of Jefferson and ties into Site 1 by way of the Dog Creek watershed, a distance of about seven miles. Of the two alternatives, the latter appears most feasible due to the current legislative land constraints attached to the designated Scenic River.

In addition to its possible linkage to Mount Jefferson State Park, Site 1 is also closely associated with The Peak, a lone mountain rising dramatically from the base of the river. The potential is for a short corridor linking Sites 1 and 2, traversing the mountain and providing a varied experience for horseback riders or hikers. The distance between sites along this corridor is slightly more than three miles so that a loop, day hike from Site 1 which utilizes both The Peak corridor and Scenic River corridor is not unreasonable.

Site 2, a rest stop without public vehicular access, is located in the general area of the Peak Creek/Silas Branch watersheds. The area is characterized by comparatively large floodplains and wide valley walls and will be accessible for service traffic by the Hoke Wagoner Road or Peak Creek Road.

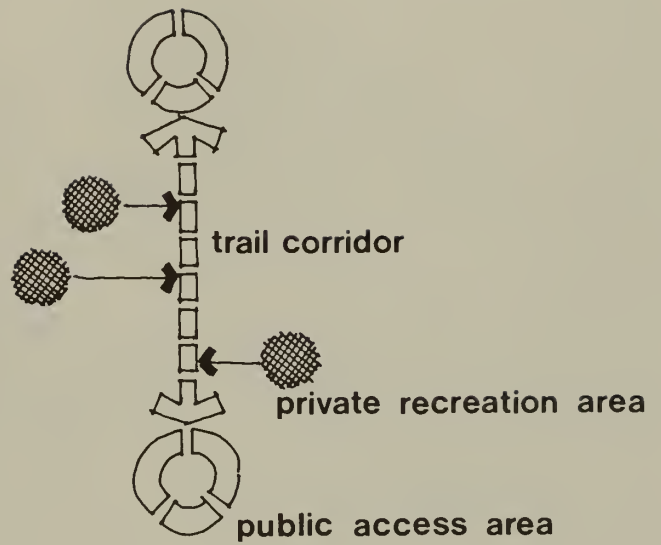
The general location of Site 3 is closely associated with U. S. 221 and the Cranberry Creek watershed. Topography in the area is highly variable with steep, narrow, valley walls both up and downstream from the large floodplain at the confluence of Cranberry Creek and the New River. The importance of the area, in terms of the size and scope of the site's final program, is based on the proximity of U. S. 221 as a major regional access to the scenic river as well as on the location of a major open space corridor which crosses the New River through the general location of Site 3. This corridor, travelling west, has the potential for linking the Scenic River with Mount Jefferson State Park along Little Phoenix Mountain, a distance of eleven miles. Such a trail could serve hikers for an extended day hike. However, in order to make the trail entirely useful a rest stop should be located along its route allowing a two-day/overnight trip for hikers. Extending east from the general location of Site 3, the proposed corridor could follow the Cranberry Creek drainage pattern, moving in the direction of Stone Mountain State Park. Over this 18-mile distance the corridor passes through Doughton Park, Thurmond Chatham Wildlife Management Area, Stone Mountain State Park as well as crossing the Blue Ridge Parkway. These public lands are contiguous and account for nearly one half of the corridor distance. In addition to its potential linkage to public land, there exist several

privately owned campgrounds and recreational facilities closely related to the proposed scenic trail corridor.

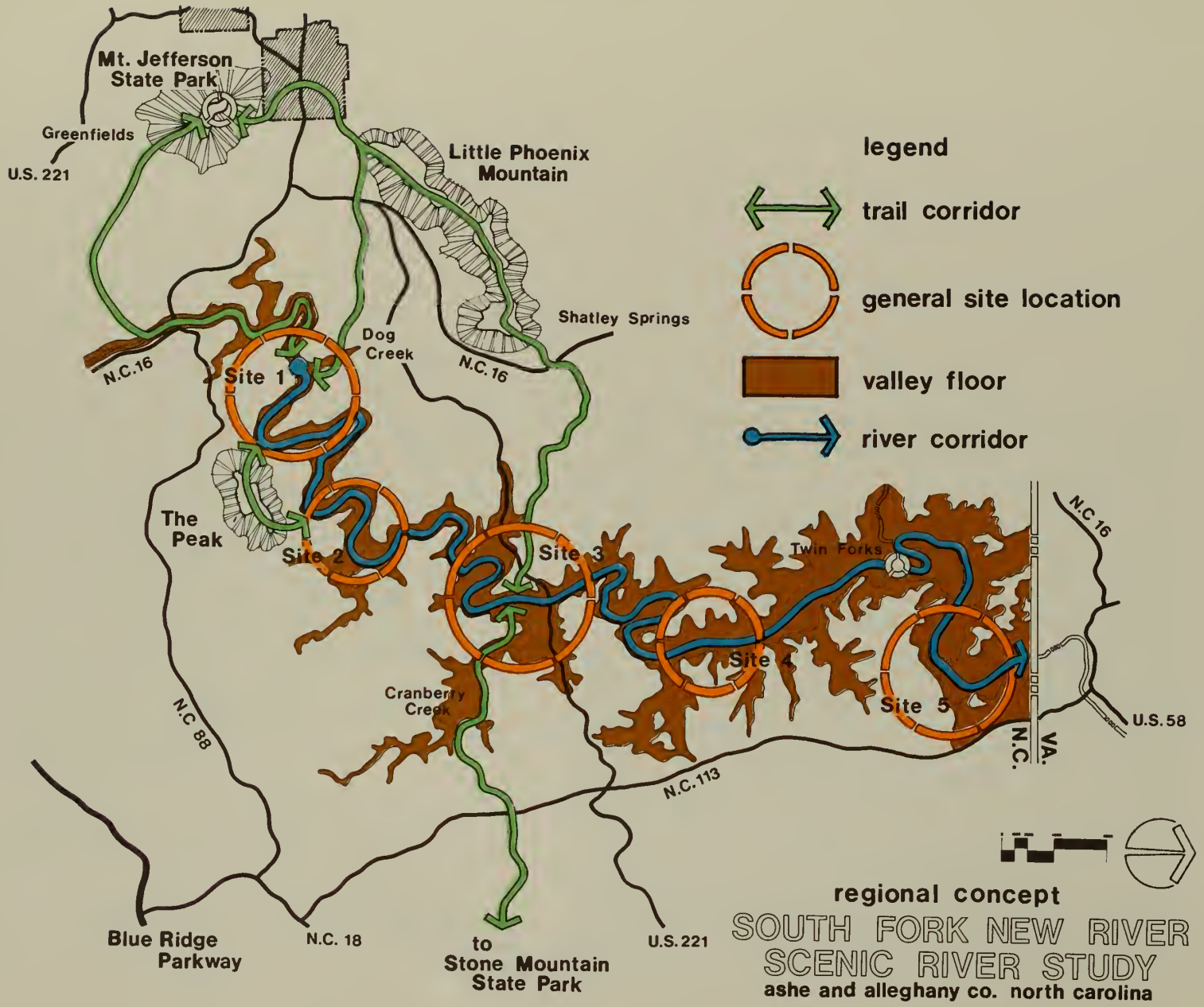
Site 4 is projected to be a minor use area/rest stop located some three to seven miles downstream from Site 3 in the area where the river finally straightens out for a considerable distance. Along this length of river, the terrain becomes more regular with narrow floodplains and moderately steep valley walls on both its sides. The general area will be accessible to service vehicles from S. R. 1308.

Situated within the projected location for the fifth river access area is Twin Forks Campground, a privately owned public recreation facility. As indicated in the report on recreation supply, the Twin Forks Campground presently provides a canoe launch, camping, and picnicking facilities which closely approximate the scope of a public immediate access area. From this viewpoint, the need to establish an additional access area is negated in lieu of the existing facility which is well managed and serves a useful purpose in the overall program.

As a result of the integration of the Twin Forks Campground into the overall program, the last publicly owned facility, Site 5, is shifted downstream to a location near the Virginia border between mile 0 and mile 3 on the Scenic River. This facility



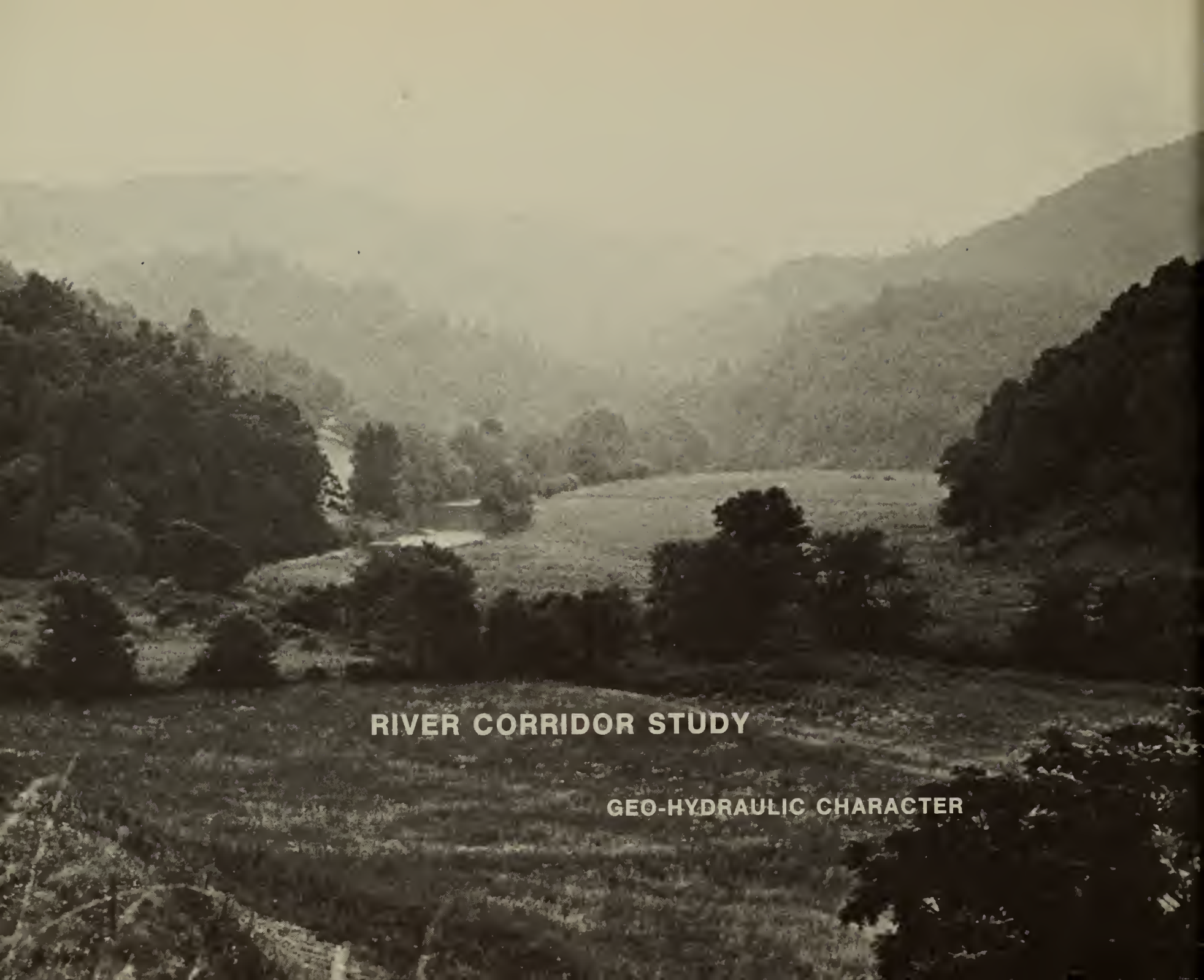
General Corridor Concept


Mt. Jefferson State Park
Greenfields
U.S. 221
Little Phoenix Mountain
Shatley Springs
Dog Creek
N.C. 16
N.C. 16
Site 1
The Peak
Site 2
Site 3
Twin Forks
N.C. 16
Site 4
Site 5
Cranberry Creek
N.C. 88
N.C. 113
N.C.
VA.
U.S. 58
Blue Ridge Parkway
N.C. 18
to Stone Mountain State Park
U.S. 221
legend
trail corridor
general site location
valley floor
river corridor
regional concept
SOUTH FORK NEW RIVER
SCENIC RIVER STUDY
ashe and alleghany co. north carolina

would be the terminal public access point in North Carolina. The area is characterized by extreme variation in topography — large floodplains opposite sheer, high bluffs. The terrain is rugged, providing unequaled visual interest but greatly limiting potential use areas and vehicular access. To the east, access to the area would originate from N. C. 113 and require substantial improvement of poorly maintained private roads or new road construction to the river from S. R. 1303. To the west, access may originate in Virginia from U. S. 58 near Mouth of Wilson and penetrate the area by way of S. R. 1313. This road is a single-lane, public gravel road which would require some improvement over all of its distance in North Carolina, in addition to an agreement with Virginia authorities, which would provide for similar improvements to the road section in that state. Alternatively, access to the general area of Site 5 from the east may be available from new road construction extending public road access from S. R. 1311.

In summary, the general concept proposes the formation of a regional trail system composed of the Scenic River and Mount Jefferson to Stone Mountain corridor. It has been shown that opportunity exists for utilizing several other corridors as potential auxiliary trails in addition to the main system. Thus, the New River would be connected to the Blue Ridge Parkway, Stone Mountain State Park and other points east, and Mount Jefferson State Park and points southwest.




RIVER CORRIDOR STUDY
GEO-HYDRAULIC CHARACTER

The South Fork of the New River lies within the Blue Ridge Province of the Appalachian Mountain System. This portion of the Blue Ridge Province is a plateau-like area between 3,000 feet and 4,000 feet above sea level characterized by gently sloping land with locally steep-sided valleys. The meandering course of the South Fork of the New River indicates that the river once flowed more quietly than it does now. The fact that the meanders are entrenched indicates that the river was rejuvenated in the geologic past. This rejuvenation or uplift caused the stream to start downcutting more vigorously and produced the locally steep-sided valley walls and rapids. As the stream downcut, rapids formed where the more resident rocks lay beneath the stream.

CHANNEL CHARACTERISTICS

The mean channel gradient in this low-energy pastoral zone is less than five feet per mile, and transported stream bed material is made up predominantly of sands and silts with a minimum of fine gravel. This is because there is inadequate current energy to transport coarser particles, and because this is also the zone wherein the stream begins to cut a channel into its own older fluvial deposits rather than eroding a foreign material in a new gradient situation.

The pastoral zone generally lies in a broadening floodplain valley or basin. Despite the relatively flat valley slope and sluggish current, conditions for a single channel are generally maintained. However, the channel is often diverted in direction by insignificant obstructions. The amplitude and irregularity of the meander become more pronounced as the river size increases and the current slackens. When the valley is nearly level, the river can flow in almost any direction for a short distance, and will frequently reverse itself in U-shaped bends and S-turns.

Stream banks on the river are generally low, near-vertical, and consist of unstable sand and silt that may be held in place precariously by meager root systems along the slope. There are several conditions and locations where some coarser sand and gravel are added to the silt bed in this reach. Wherever the current contacts the side of the valley, it continues to erode and add such material. In addition, the steeper-gradient tributary stream joining the mainstem will bring in sand and gravel during high water. This contribution by tributaries causes the buildup of extensive fluvial cones and sills in the main channel, tends to make the river wider and shallower immediately downstream from the confluence, and diminishes the high water capacity of the channel.

The streamway of the New River is located in broad valleys that have in most cases been stripped of original forest stands, leaving the waterway readily visible as it winds amidst open pasture and croplands. Deciduous trees and brush mark the river banks in a thin line of growth, while trees, shrubs, and meadows tend to encroach upon the point bar beaches. The streamway here is often as narrow as the wetted channel itself, and the flanking pastures have completely altered the original environment and eco-system of the waterway.

STREAMFLOW CHARACTERISTICS

Excess water runoff during local rainstorms or the seasonal snow-melt cycles will affect the gradient of the river to a different degree. High water stages beyond main channel capacity will tend to cause the overflow to spread into wider fringe land as the valley gradient decreases, and the velocity and energy of overflow waters inundating adjacent land will increase as the valley gradient increases. For equal water depth, the current forces are a function of the square of the velocity, and there exists a greater potential for structural damage in a valley with a greater gradient. Precipitation on the basin averages about 48 inches per year. Average annual snowfall is about 20 inches. The 52 inches of precipitation amount to 294 billion gallons per year for the entire basin area of 325 square miles. Evaporation and use by plants amount to 143 billion gallons per year and 151 billion gallons per year are discharged by the South Fork New River.

The South Fork, like many mountain streams, is characterized by rapid increases in flow in response to rainfall. Rates of rise of one foot per hour are common following periods of intense rainfall. Lowest daily flow recorded at a USGS gaging station near Dog Creek during 49 years of record (1925-1974) is 65 cubic feet per second. The maximum peak discharge was 52,800 cubic feet per second during the 1940 flood (recurrence interval greater than 100 years). River stage was approximately 20 feet above median stage at the peak of the 1940 flood. A statistical analysis of the data for the 1963-73 period shows that average flow is 416 cubic feet per second, the 50-year flood (peak discharge expected to be equalled or exceeded once every 50 years on the average) is almost 31,000 cubic feet per second, and the minimum one-day flow having a recurrence interval of 20 years is 86 cubic feet per second. Winter, early spring, and June are the months with the highest flows, while the fall months are considerably lower. The difference between the flows during the wet and dry months is due to seasonal distribution of rainfall.

WATER QUALITY

As the stream bank becomes more intensely developed, the environment becomes subject to man-made measures and to modifications for the control of bank erosion, channel silting or scouring, and flood containment. Such channel alterations are frequently designed to serve hydraulic purposes to the exclusion of environmental, aesthetic, wildlife, fish, or recreational factors. Consequently, the streamway can become a revetted canal shorn of all possible current impediments normally found in natural channels. Thus shrub-sustaining islands, channel snags and streambank roots, meander eddies and slacks, sand sills and riffles frequently serve vital functions as fish-resting areas and feed stations, spawning gravels and aeration zones, and the narrow vegetative buffer along the bank functions as a filter area against sediment wash during storm periods.

While agriculture, crop and dairy pasture production are a compatible and indigenous activity on the floodplain, there are instances and conditions where livestock and fertilizer pollution can jeopardize the water quality of the stream in this low-energy river. Where the river is relatively small, especially during the low water stages of the summer months, there is a limit as to how much effluent from drinking cattle, streambank barns, manure piles and feed lots any particular section of river can absorb, especially when water temperature rises along with the BOD factor. While agricultural effluents may not increase significantly in the future, the growth of second home development, plus the increasing population of existing communities up river that are discharging treated sewage into the stream may impair the water quality. The North Carolina Dept. of Natural and Economic Resources, Office of Water and Air

Resources has placed the entire 26.5-mile section of the river covered by the proposal under the category Class "C" waters. The best uses for Class "C" waters were determined by the State to be fishing, boating, wading, and any other use except for bathing or domestic water supply resources.

However, these stream classifications are based on the opinions of local people as to the best potential uses for the particular stream. These opinions were solicited at a series of public hearings and do not necessarily reflect actual measurements of physical water quality characteristics. In fact, water quality in a given stream may exceed, and often does exceed, the criteria for the particular classification. Only 7.9 percent of the stream segments in the sub-basin drained by the South Fork are degraded to some degree.

Water quality in the New River and the South Fork of the New River is affected primarily by municipal and industrial discharges. At the present time there are no direct effluent discharges to the river; however, several tributary streams do receive waste water from municipal and industrial sources. Although there are nine separate sources of effluent which discharge into tributaries of the New River or its South Fork, there are great distances between the source and segment of the river covered by the proposal. For example, the town of Blowing Rock discharges its waste water into the Middle Fork, a tributary of the South Fork, approximately 72.4 miles upstream from the South Fork's confluence with Dog Creek (the beginning point of the proposal). The town of Boone, North Carolina, in Watauga County, also discharges to the Middle Fork some 63.3 miles upstream from Dog Creek. The town of West Jefferson, in Ashe County, releases its treated waste water to Buffalo Creek, a tributary of the North Fork New River. From the confluence of Buffalo Creek with the North Fork the effluent is mixed and diluted for a total of 21.8 miles to the junction with the South Fork. The Sprague Electric Company of Ashe County also discharges to the North Fork approximately 20.0 miles upstream from the junction with the South Fork. These two sources of waste water affect only the lower 4.5 miles of the proposed river area. These great river mileages help dilute and dissipate the treated waste water before it reaches the proposed river corridor.

In Alleghany County, the town of Sparta and the Sparta Pipes Company discharge a total of 0.133 MGD (million gallons per day) to the Little River, a tributary of the mainstem of the New. The Little River enters the New River far downstream of the Scenic River, and will have no effect on water quality.

The remaining three sources of waste water, Hanes Corporation, Greensboro Manufacturing Company, and the Town of Jefferson, all discharge secondarily treated waste water within a relatively few miles of the river proposal area. Hanes Corporation and the Town of Jefferson both discharge to Naked Creek, 2.3 miles upstream and 4.0 miles west of the South Fork. Greensboro Manufacturing discharges directly to Dog Creek, 1.1 miles west of the South Fork.

Water temperature in the South Fork New River watershed ranges from 60°F in the higher elevation trout streams to 73°F in the mainstem New River before it enters Virginia. The average temperature for the entire watershed is 65.2°F. In spite of the presence of waste water discharges overall water quality has not been adversely affected. Dissolved oxygen concentrations found throughout the watershed attest to its high water quality. Concentrations ranged from 9 ppm to 10 ppm with an average of 9.3 ppm. Free carbon dioxide concentrations were low in all streams, ranging from 5 ppm to 10 ppm with an average of 7.2 ppm. Streams throughout the watershed had an average pH of 7.2. The pH range was from 6.8 to 7.8. The total alkalinity concentrations throughout the sample area ranged from 14 ppm to 28 ppm with an average of 19.8 ppm for all sample stations.

Nonpoint sources of pollution are considered to be of less importance than point sources in water quality problems, but do contribute to water pollution in the basin. Agricultural runoff, both from fertilizers and from the feedlots within the area, is believed to contribute a significant volume of manmade pollutants to the surface waters from diffuse (or nonpoint) sources.

Recent studies have demonstrated that sediment is the primary carrier of such pollutants as pesticides, phosphates, and many forms of animal waste. However, no sediment data are available for this sub-basin.

The woods products industry is well developed in this basin. Some silting results from both the harvesting, and from the unwise location of roads made into the woods by the harvesting equipment.

GEOLOGY

The South Fork of the New River flows through some of the oldest rocks in the United States. Rocks related to these have been dated by radiometric methods at 1.1 billion years old. In addition to their extreme age, all of these rocks are quite complex for they have all been metamorphosed twice, possibly three times in the past. The first metamorphism occurred about 450 million years ago, and the second about 250 million years ago. The process of metamorphism changes the original character of the rocks and complicates the interpretation of each formation. All of the rocks in the vicinity of the South Fork of the New River are metamorphic except for any post-Paleozoic intrusives that may be found.

The oldest pre-Cambrian rocks outcropping along the Scenic River are located from one and five tenths to two upstream from the North Carolina-Virginia Line. They belong to the Cranberry Gneiss of the Elk Park Plutonic Group, which is the most abundant phase consisting of equigranular quartz monzonite, quartz monzonite flaser gneiss, and quartz. The majority of the Cranberry Gneiss is igneous in origin with minor amounts of sedimentary material.

Noncomformably overlying the Elk Park Plutonic Group is the Ashe Formation. The Ashe Formation is a fine-grained, thinly layered, sulfidic, biotite — muscovite — gneiss that is interlayered with varying amounts of mica schist and amphibolite. This section extends north from the junction of Obids Creek with the South Fork to a point on the river east of Mouth of Wilson, Va. The Ashe is pre-Cambrian in age and has been dated radiometrically at approximately 800 million years. It has been suggested that the formation may have resulted from ancient lava flows.

Comformably overlying the Ashe Formation is a finely foliated gneiss called the Alligator Back Formation. It is composed of fine-grained quartzofeldspathic laminae a few millimeters thick separated by thin micaceous partings.

The Alligator Back Formation is Late pre-Cambrian to Early Paleozoic in age and is intruded by Muscovite-granite pegmatite dikes and sills.

Structural Features: Thrust faults, with displacements commonly as great as several miles are a characteristic structural feature of the Southern Appalachians. The South Fork of the New River cuts the Fries thrust fault NE of Boone and at the confluence of the South and North Forks of the New River. Movement along this fault in the vicinity of the South Fork shoved Cranberry, Ashe, Alligator Back, and other related rocks northwestward over the top of other Cranberry rocks. Another major thrust fault, the Linville Falls fault, has been

mapped just south of the study area. Appalachian thrust faults are old, inactive, and present little chance of movement.

The South Fork flows across the western limb of the Ararat Synclinorium. This synclinorium is the result of a large downfold in the earth's crust during a period of mountain building. This fold along with thrust faulting and topography controls the outcrop pattern of the rocks along the South Fork of the New River.

Mineral Resources: Several minerals have been extracted from the rocks along the South Fork in the past. Copper is the most notable commodity mined and the most desirable for future exploration. The South Fork of the New River cuts across one of the major copper-bearing sulfide belts in the United States. This belt extends from Maine to Alabama. The third largest copper mine in this belt, the Ore Knob Mine, is located less than two miles from the southeast bank of the South Fork. This deposit has been abandoned several times only to be reopened when new exploration techniques located additional ore.

Two other copper deposits lie within one mile of the South Fork, the Gap Creek and Church Prospects. Both mines are in operation and the owners of the Church Prospect suggest that copper mineralization in this area may be more widespread in the late pre-Cambrian volcanic rocks than previously realized. Copper-bearing sulfides are also found along strike for several miles into Virginia where they are known as the Great Gossan Lead. The Great Gossan Lead extends for some twenty miles along strike in Virginia and represents the longest massive sulfide deposit in the Eastern United States.

Three small mica mines are located within the one-mile limits of the Scenic River, even though numerous mines are present in the Jefferson-Boone district located a few miles west of the South Fork. All of them have had small production records, with peak production occurring in the 1930's and '40's. As long as sheet mica can be supplied more economically from foreign countries, there is little chance of mica mines in this area becoming important again.

Other previous mining activity in the area was for crushed stone or sand and gravel. There was only minor production from any one quarry or pit. The majority of the material was used for road material first by the county and later by the State Highway Commission.

In summary, the potential for finding exploitable deposits of copper, pyrite, and pyrrhotite, particularly of the massive sulfide type is excellent for this part of the State. However, in-depth surveys have not been complete to substantiate this proposition. Therefore, no sites along the 26.5-mile Scenic River have been identified for their mineral value.

Groundwater: Adequate supplies of groundwater can be obtained from irregularly spaced fractures and joints in the bedrock, in the pores of the saprolite, and in the river basin alluvinum. Groundwater is the source for all domestic water supplies in the river basin, most of which are from drilled wells. Wells may range in depth from 50 feet to 400 feet with public supply wells averaging about 150 feet in depth and yielding an average of 57,500 gallons per day.

Groundwater quality in the basin is excellent. The dissolved solids range from 30 mg/l (milligrams per liter) to 80 mg/l and the water is soft to moderately soft ranging from less than 15 mg/l of hardness to no more than 45 mg/l.

Present groundwater withdrawal is minimal in the 26.5-mile segment that is designated in the National Wild and Scenic River System. Sufficient yields of good quality groundwater can be developed for camping and recreation needs.

TOPOGRAPHIC UNITS, AND SOIL AND SLOPE CONDITIONS

The river corridor was delineated into typical topographic units, and the soil and slope conditions for each unit were described and evaluated for recreational potential. The first topographic unit, Section 1, consisted of a broad floodplain terrace with moderate slopes of 2-6 or 6-10 percent, and an equally expansive valley wall with moderate to severe slopes of 15-25 or 30-60 percent. The first floodplain terrace includes the river bank and the adjacent land area that is most frequently flooded during high water. This narrow strip which averages 20 to 50 feet in width is usually left in a natural condition. Alluvial soils are found in this situation, predominently Congaree and Buncombe fine sandy loam. For this reason, buildings, roads, and recreational facilities are not suited for this area. Even trails are not desirable because of the frequent flushing disposition of sediment caused by high water. The second floodplain terrace is used for pasture and cultivation of pasture crops, and includes all of the 100-year floodplain. Slopes on crop land range from 6 to 10 percent, and 15 to 45 percent for pasture. Comus, Tate, and Codorous soils are found on the moderate slope conditions, and Ashe and Chandler soils are found on the steeper slopes. These soils series were generally found to have few limitations for development, the only significant problem being susceptibility to infrequent flooding. Otherwise, the terrace soils have no limitations for hiking or horseback riding trails, primitive camps, picnic areas, or small parking areas. However, the flooding hazard would discourage extensive road development and prohibit the development of permanent buildings, tent and trailer camps, and extensive parking facilities. The moderately sloped terrace land and coves that are outside of the 100-year floodplain would make appropriate sites for permanent facilities. The soils have the proper drainage qualities, bearing capacity, and depth to bedrock. However, the depth to bedrock for the Ashe series is not acceptable for septic tanks and building foundations.

The valley walls in Section 1 are primarily used for pasture and timber production. The pasture land is usually an extension of fields in the floodplain terrace, and white pines are planted in tightly spaced stands on the steeper slopes of the valley wall. Development limitations are directly related to the severe slopes encountered on this type of site. The stony phases of Ashe, Chandler, and Porter are common, and all have erosion and depth to bedrock limitations.

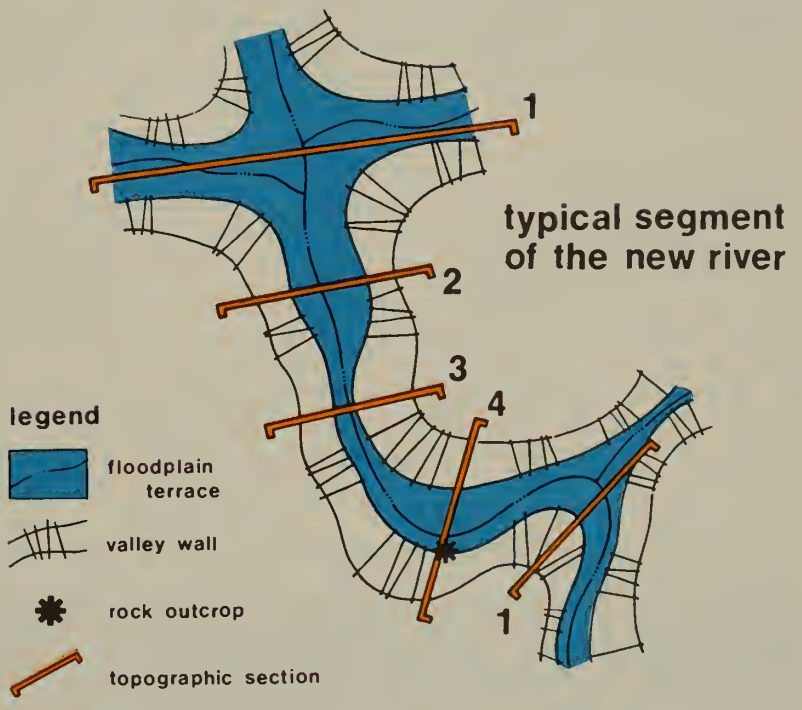
Ridge tops that have moderate slopes of 6 to 10 percent and Clifton, Watauga or Evard soil series would make acceptable sites for intensive recreation activities. Most of this land is in pasture and is the primary location for secondary roads. Most major highway crossings are made in this topographic unit; the road follows the gentle ridge tops, then descends along a valley draw or cove that leads to the river, crosses the river, and then ascends the valley draw on the opposite side of the river. Major towns or small communities are located in this situation; however, none are within the study corridor.

The second topographic unit, Section 2, has a relatively wide and steep floodplain terrace and very steep valley walls that

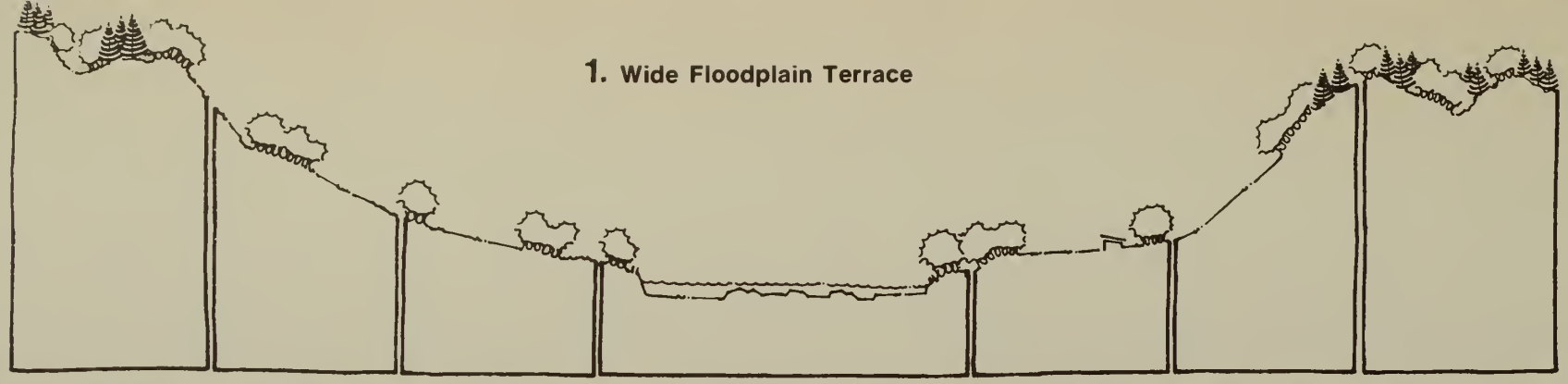
separate the river from the ridge top. This unit usually occurs downstream from Section 1 where the river straightens and the valley becomes progressively narrow and the water flow increases in speed. Generally, the floodplain terrace slopes are steeper than those in Section 1, ranging from 6 to 15 and 25 to 45 percent. The first floodplain terrace is identical to the one in Section 1; similar slopes and soils are present.

The slopes on the second floodplain terrace are steeper than those in Section 1. They range from 6 to 15 and 25 to 45 percent on Ashe, Clifton, Watauga or Tate soil series. Tate, Ashe, and Clifton soils are present on moderate slopes of 6 to 15 percent, and the stony phases of Ashe, Chandler, and Watauga are present on moderate slopes of 6 to 15 percent, and the stony phases of Ashe, Chandler, and Watauga are present on steeper slopes of 25 to 45 percent. Most of this terrace is outside of the 100-year floodplain; the primary land use is pasture and crop land on moderate slopes, and pasture land on steeper slopes. Potential areas for developing recreational facilities included the moderate slopes of the terrace, and the small draws and coves that drain into the river that are outside of the 100-year floodplain.

The valley wall and ridge top exhibit the most severe slope change, increasing to 25 to 45 percent or 45 to 65 percent. The majority of these slopes are wooded, having a dominant overstory consisting of oak, hickory, poplar, and maple species, along with coniferous species of pine and hemlock. These slopes are considered undevelopable because of the

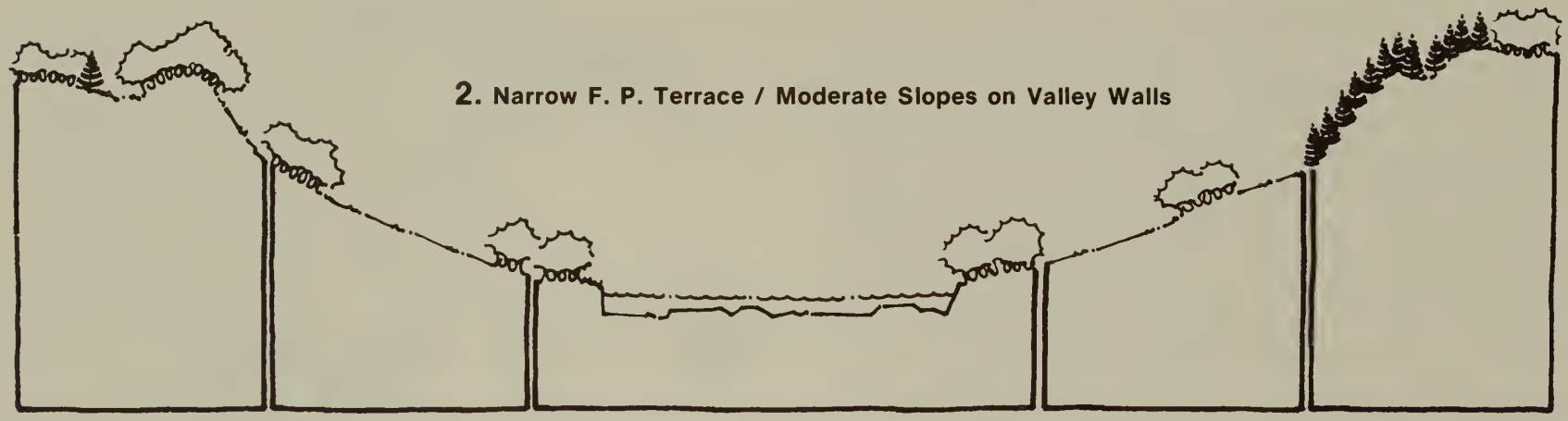


1. Wide Floodplain Terrace



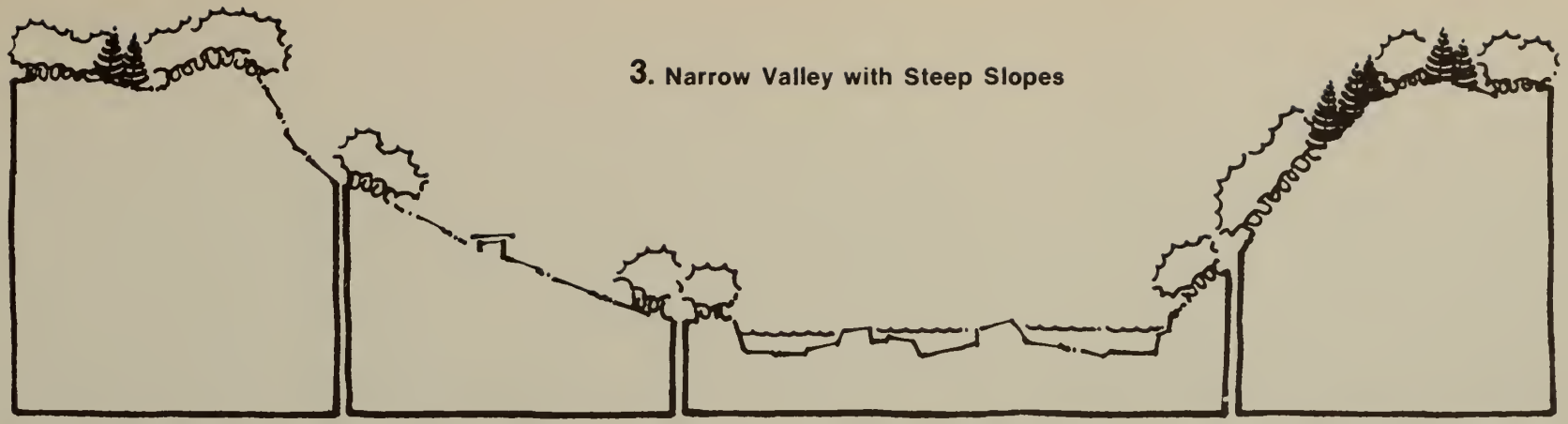
Ridge	Valley Wall	2nd Terrace	River and 1st Floodplain Terrace	2nd Terrace	Valley Wall	Ridge
Soil: Clifton, Weteuga, Evard. Well Drained and Erosion Hazard.	Porter, Ashe (Stoney). Depth to Bedrock	Tate, Cornus, Codorous. Infrequent Flooding	Congaree end Buncombe Frequent Flooding	Ashe, Chendler Erosion Hazard end Infrequent Flooding.	Ashe (Stony), Chandler Erosion Hazard and Depth to Bedrock.	Watauga, Porter, Ashe. Erosion Hazard and Depth to Bedrock.
Slope: 6-10% or 10-25%	15-25%	6-10%	2-6% or 6-10%	15-45%	30-60%	25-45%
Vegetation: Oak/ Hickory Remnants	Oak/Hickory Remnants.	Oak/Hickory and Cove Remnants.	Bottomland Remnants	Oak/Hickory and Cove Remnants	White Pine or Oak/Hickory	Oak/Hickory.
Land Use: Pasture	Pasture	Pasture end Crop Land.	Forest or Pesture	Pasture	Pasture end Tree Farming.	Forest Lend and Tree Farming.

2. Narrow F. P. Terrace / Moderate Slopes on Valley Walls



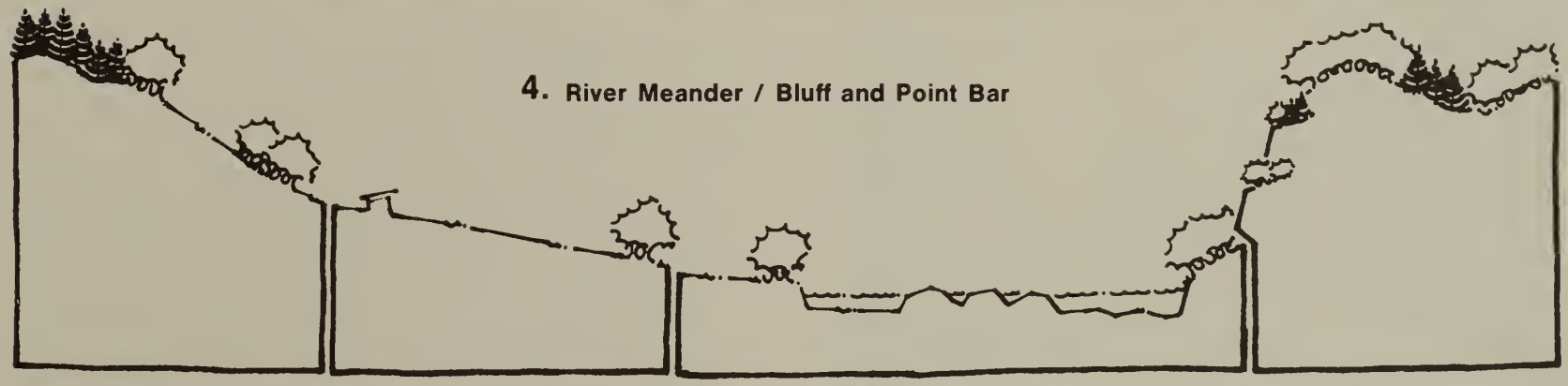
Ridge and Valley Wall	2nd Terrace	River and 1st Floodplain Terrace	2nd Terrace	Ridge & Valley Wall
Soil: Ashe, Chandler Erosion Hazard, Depth to Bedrock, Stoniness.	Ashe, Tate, Clifton. Infrequent Flooding	Suncook, Buncombe, end Congarree Frequent Flooding	Ashe (Stoney), Weteuga, Chandler Erosion Hazard end Stoniness	Ashe (Stony), Chandler Erosion Hazard & Stoniness
Slope: 25-45%	6-15%	6-10%	25-45%	45-65%
Vegetation: White Pine, Oak/ Hickory.	Oek/Hickory, Cove Remnants	Bottomlend Remnants	White Pine or Oak/Hickory	Oak/Hickory on North Fecing Slopes
Land Use: Pasture and Tree Farming	Pasture and Crop Land	Pesture or Forest	Forest or Tree Farming	Forest Land

3. Narrow Valley with Steep Slopes



Ridge and Valley Wall	2nd Terrace	River and 1st Floodplain Terrace	Valley Wall and Ridge
Soil: Watauga, Clifton, Evard. Erosion Hazard and Stoniness. Depth to Bedrock.	Ashe, Chandler, Tate Erosion Hazard, Stononess, and Depth to Bedrock.	Buncombe end Tate Frequent Flooding	Ashe, Watauga, Chandler Erosion Hazard, Stoniness end Depth to Bedrock
Slope: 45-60%	25-45%	6-10%	45-60%
Vegetation: White Pine, and Oak/Hickory.	White Pine, Oak/Hickory Cove Remnants.	Bottomland Remnants	Oak/Hickory, Cove Remnants
Land Use: Forest or Tree Farming.	Pasture, Tree Farming	Pasture or Forest Land	Forest Land, Tree Farming

4. River Meander / Bluff and Point Bar



Ridge and Valley Wall	2nd Terrace	River and 1st Floodplain Terrace	Bluff / Ridge
Soil: Ashe, Tate, Clifton, Evard. Well Drained, Depth to Bedrock	Tate, Codorous, Comus. Infrequent Flooding	Codorous, Comus, Congaree, end Buncombe Frequent Flooding	Ashe, Watauge Erosion Hazard, Rock Outcrops, Depth to Bedrock
Slope: 10-25% or 25-45%	6-10% or 10-15%	2-6%	25-65%
Vegetation: White Pine (or) Oek/ Hickory Remnents.	Oak/Hickory, Cove Remnents	Bottomland Hardwood	Oek/Hickory
Land Use: Pasture (or) Tree Farming	Pasture and Crop Land	Pasture or Forest	Forest Land

severe slopes and stony soils. The stony steep and hilly phases of Ashe, Chandler, and Watagua are predominantly found in this situation. Even hiking trails will encounter erosion problems on steep stony soil.

In the next topographic unit, Section 3, the river continues on a straight, swift course, the river valley narrows on both sides and the valley wall slopes increase to 60 percent. The floodplain terrace dwindles to a narrow band, and the second terrace often disappears on one side. The narrow river bank, the first terrace, is wooded in species of bottomland hardwoods, maple, oak, poplar, birch, and sycamore. The second floodplain terrace is also narrow and has steep slopes ranging from 25 to 45 percent. Most of this land has been cleared for pasture or has been replanted in white pine for Christmas tree sales or furniture production. Development is not practical on these slopes because of stoniness and shallow soil horizons characteristic of Ashe and Chandler soils.

Severe slopes of 45 to 60 percent are encountered on the valley wall and ridge complex. The stony steep phases of Ashe, Chandler, and Watauga soils prohibit development of buildings, campsites, and other activities that require a hard surface or level ground. Most of these slopes are covered with mesic hardwood and coniferous species, and only a small portion of this land has been harvested for its timber value.

The final topographic unit, Section 4, is characteristic of a river meander in which a bluff occurs opposite a protruding ridge. In this case, the river flow met an erosion-resistant bedrock that was uplifted over time, and a steep wall of rock was exposed. Where rock outcrops do not exist, the bluff has stony steep phases of Ashe, Watauga, and Chandler soils with slopes in excess of 60 percent. These slopes are forested with mesic hardwood and coniferous species previously described, although the hemlock and pine species usually dominate this situation. Development of the bluff for recreational activities is not feasible — even hiking and nature trails would be difficult to design on these soils and slope conditions. The only area which appears to have potential for trail development is the narrow floodplain terrace that exists at the base of the bluff, or the narrow coves which serve as drainage ways for the upland ridge. However, these coves are extremely steep and average from 25 to 45 percent in slope. Thus, the principal recreational value of the bluff is its scenic quality, which should be protected for a scenic river.

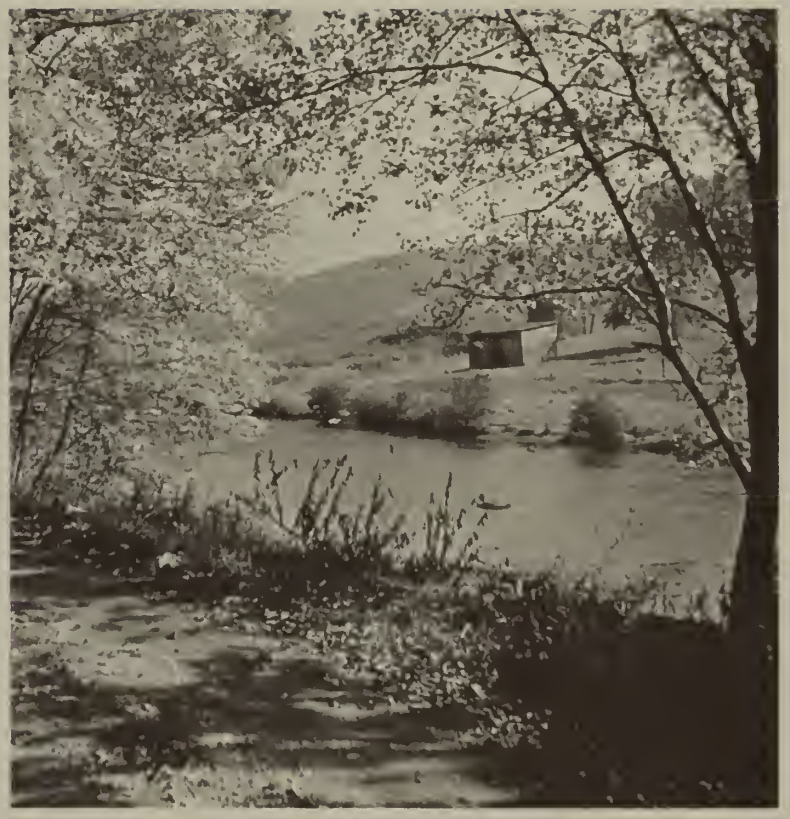
The ridge opposite the bluff offers a more desirable area for recreational activities. The floodplain terrace is as wide as the one described in Section 1 and has similar slope, soil, and use characteristics. The first floodplain terrace includes the river bank and adjacent land that is most frequently flooded. This narrow strip averages from 20 to 50 feet in width and for the most part has been left in a natural condition.

The second floodplain terrace has slope ranges of 6 to 10 and 10 to 15 percent depending on the soil type. Codorous,

Comus, and Tate soils are most common on 6 to 10 percent slopes, and Tate soils are also found on the steeper slope range of 10 to 15 percent. These slope and soil conditions generally have few development limitations for recreation facilities and activities. The most significant limitation is the flood hazard. Over half of this terrace is included within the 100-year floodplain elevation. For this reason only hiking or horseback riding trails, primitive camps, picnic areas, or small parking areas would be suitable for this area. The more permanent facilities such as a visitor center, tent and trailer camps, or extensive parking facilities, are more suited to that part of the terrace that is outside of the 100-year floodplain.

The ridge top of the meander also is a suitable area for developing intensive recreation facilities. Slopes are usually moderate, from 6 to 10 percent, and the soil series consist of either Ashe, Clifton, or Evard. The loamy and eroded hilly phases of these soil series usually dominate the area.

The ridge and floodplain terrace have been cleared and used for pasture and crop land. The steep valley walls, usually on slopes of 25 to 45 percent, are also used for pasture; however, the stony character and depth to bedrock of the Ashe and Clifton soils would prohibit development of permanent facilities or activity areas. Access to the ridge top is usually provided by a state secondary highway or old farm road that runs the entire length of the upland ridge system.




RIVER ACCESS

Access for the 26.5-mile stretch of scenic river is provided by one Federal Highway, U. S. 221, and several State maintained secondary roads. U. S. 221 runs north/south through the region, crossing the South Fork at river mile 14.5 over a two-lane high-water bridge. This road is also the most heavily travelled route through the Scenic River Valley. Three other bridge crossings exist on the river. S. R. 1595 intersects the river at river mile 21, crossing it as a one-lane high-water bridge. Two one-lane, low-water bridges represent the other crossings on the river. S. R. 1601 crosses the river at river mile 18, and connects S. R. 1595 and U. S. 221. This section of road parallels the river for three miles and is a one-lane gravel road. S. R. 1308 crosses the river at river mile seven at a one-lane low-water bridge, and connects N. C. 93 in Alleghany County to S. R. 1560 in Ashe County.

Four State-maintained loop roads parallel the Scenic River corridor, S. R. 1589, S. R. 1566, S. R. 1549 and S. R. 1567. S. R. 1589 connects N. C. 88/16 and N. C. 221 via the river corridor, and parallels the river for approximately three miles. It terminates at S. R. 1591, and is approximately three miles from U. S. 221 via S. R. 1593.

S. R. 1567 is another loop road that connects U. S. 221 and N. C. 16. It parallels the river for one mile as a two-lane paved road.

S. R. 1566 parallels the river for two miles between S. R. 1567 and S. R. 1560 in Ashe County. It is a one-lane gravel road which has not been monitored for traffic volume.

S. R. 1549 begins at the terminus of S. R. 1560 in Ashe County, and becomes S. R. 1311 in Alleghany County for an additional one and five tenths miles. The entire length of the road parallels the river and is a one-lane gravel surface.

Many secondary roads act as connectors between roads located on the ridge and those in the valley corridor. S. R. 1592 connects U. S. 221 with S. R. 1589 along the river, and S. R. 1310 provides access to the valley in Alleghany County. S. R. 1313 emanates from Mouth of Wilson and terminates at the river in Alleghany County. S. R. 1314 originates off N. C. 113 and continues north to the river. S. R. 1303 runs along the southern ridge of the South Fork for five and two tenths miles, and four secondary roads, S. R. 1306, S. R. 1305, S. R. 1302, and S. R. 1309, originate from S. R. 1303 and dead end at the river. In Ashe County, S. R. 1590 and S. R. 1528 connect N. C. 16 with the Scenic River.

Many other farm roads exist along the river bank. They provide access to fields and pastures along the river. There is no section of river along the 26.5 miles of Scenic River that does not have either a public or farm road paralleling the river bank.

According to the North Carolina Department of Transportation, no rights-of-way have been recorded for any of the previously mentioned roads, including U. S. 221. Therefore, the legal right-of-way that can be claimed by the State extends from the back of the ditch on one side to the back of the ditch on the other side of the road. This situation, combined with increased river use, has caused a potentially dangerous parking problem for people who use the shoulder of the road to park their vehicles. Bridge crossings are the only access points the public now has to the river and, consequently, people are congregating at these points in order to launch canoes or rafts.



LAND USE

The two counties which border the Scenic River, Ashe and Alleghany are mountainous and distinctly rural. Of the total 1970 population in these two counties, 11 percent lived in the three small urban areas of Sparta in Alleghany County, and Jefferson and West Jefferson in Ashe County.

Forty-five percent of the land use in Alleghany County is agricultural, and 45.8 percent is forest, both private and commercial. Only three and one tenth percent is considered urban use. Ashe County has similar percentages, 39 percent for agriculture, 53 percent for forest, and three and seven tenths percent for urban use. There appears to be a shift occurring in land use away from agricultural uses. This trend can be seen when figures from the 1969 agricultural census are compared with those from 1964. For example, in 1964 there were 3,826 farms in the two counties as compared with 3,203 farms in 1969, a decline of 16 percent. At the same time, the average size of farms increased by three percent from 80.7 to 82.9 acres. However, total acreage in farms decreased by 14 percent. Changes in land use have been gradual, normally shifting from agricultural to nonagricultural uses. This change has brought about a rapid increase in farm land values, causing financial difficulties for present farm owners, as well as for possible new operators. Greater farmland values come from increased value of land for nonfarm uses. All these factors make it difficult to retain the natural resources for agricultural purposes. The land best suited for agriculture is, as a general rule, also the land most attractive for highways, residences, and recreational facilities.

Most of the crop land in the river corridor is located on the rich alluvial soils of the valley floor. The floodplain terraces offer rich soil and moderate slopes. Pasture land is located on land with steeper slopes, usually 10-45 percent, and with stonier soil conditions. The valley walls and steep floodplain terraces are normal location for such use. Crop and pasture land is usually found in combination along the river. A portion of the floodplain terrace is alotted for hay and other field crops, and the remainder is left for pasture. The adjacent valley wall is either cleared for pasture, converted to a forest crop, or left in a natural forest cover. The conversion of crop land to hay and forest crops has caused a general decline in acres of land devoted to crop cultivation.

The primary forest crop is white pine that is used for either furniture production or Christmas tree sales. Steep valley slopes that were once pasture are being planted with white pine. Many of these tightly spaced stands can be seen from the river. However, the bulk of the forest sites are still located on the mountaintops and upper slopes, out of sight from the river corridor; the remaining forest sites in the valley are generally located on land that is below average in productivity (cannot grow 50 cubic feet per acre per year).

SOUTH FORK NEW RIVER SCENIC RIVER STUDY

ashe and alleghany co. north carolina



land use in the
visual corridor of the river

Residential or vacation home development has increased over the past several years. The APCO power project increased land values along the river, which in turn increased the opportunity for speculation in the area. Land has been purchased by private individuals and corporations along the river in hopes that the proposed lake would be a valuable attraction for recreational and vacation home development. Several homes have already been built along the river and others are in the planning stage. Even without the lake, the river's serene pastoral character seems to attract people interested in river recreation and second-home development.

The river has been and will continue to be an important recreational asset to the region. Before the power project, the river was a popular canoe and rafting trail, and fishing stream. Canoeists have been able to launch their craft from public rights-of-way along bridge crossings; however, they have been trespassing on private property when sites for camping and picnicking were desired. Some fences have been damaged, cattle have been frightened, and crops have been trampled in isolated instances. Several landowners have expressed concern over the increasing use of the river and the lack of protection for their land.

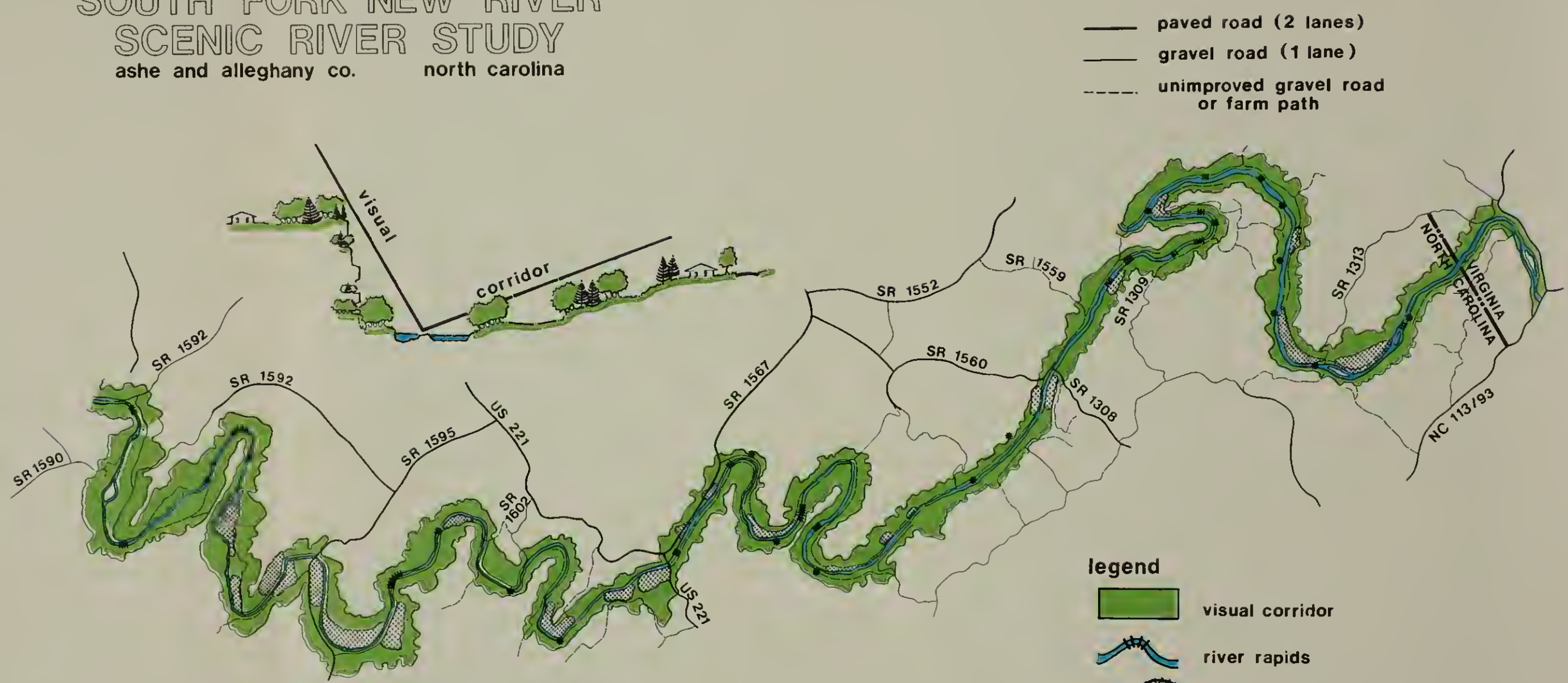
Presently, only one recreational facility is operating on the river. Twin Forks Campground is a privately owned camp located at the confluence of the North and South Forks. It offers overnite tent camping, a picnic area with shelter, and limited hiking trails.

From existing information it is evident that many land uses compete for a relatively small amount of the available land. The major competitors are agriculture, highways, residences, and recreation. For this reason, land-use planning has been undertaken by a few of the municipalities within the New River Valley area, but implementation of these plans has not been fully successful. Most of the counties within the valley have considered land-use plans, but due to citizen opposition none have yet been adopted. Although there has been limited success with the adoption of land-use controls in Ashe and Alleghany Counties, there have been some achievements in this area. Sparta, the largest town in Alleghany County, is enforcing the State building code. Alleghany's Board of Commissioners has stated publicly that it will adopt a floodplain ordinance to control the section of the New River flowing through Alleghany County. Ashe County is enforcing a countywide building code and monitoring development in designated flood potential areas throughout the county to comply with HUD's Flood Insurance Porgram. A countywide zoning ordinance for Ashe County has been prepared and is being studied by the County Commissioners. If a countywide zoning ordinance is not adopted, the Commissioners intend to adopt a floodplain ordinance to protect the New River.

In summary, farm land is being diverted to nonfarm uses at a rapid rate. At the same time, farm land values are accelerating rapidly, reflecting nonfarm uses and improved incomes. Many of the benefits of agricultural programs and research have been capitalized into land values. These higher values yield a cash flow to farm owners when they liquidate their holdings, but to tenant farmers and new farmers coming into the business, higher land values mean higher cost, making it more difficult for succeeding generations to enter farming.

SOUTH FORK NEW RIVER SCENIC RIVER STUDY

ashe and alleghany co. north carolina



archaeological sites and geologic features
In the visual corridor of the river

ARCHAEOLOGICAL SITES

Four archaeological surveys have been performed in the New River Valley since 1964. The fourth survey, conducted in 1976, focused on those sites which appeared to have potential for archaeological finds. Survey teams examined sites located in broad bottomlands with natural levees that provide for prehistoric habitation above floodplains, rock overhangs, rock shelters, and knolls. Other locations where finds were reported include high and low ridge tops, saddles of ridges, and protected areas at the base of rock escarpments.

To date there have been no absolute or exhaustive studies done in the area. Only brief surveys have been conducted and these have been limited to the Scenic River. However, all the indirect evidence points to the area as being highly productive in archaeological resources.

Core samples at the various sites have yielded evidence that the remains of several occupational tribes lie stratified beneath the surface. Samples brought up archaeological evidence suggesting the wealth that lies beneath, but no sample has caused researchers to return for extensive exploration.

The summary of the 1976 survey report done by the N. C. Division of Archives and History speaks of several levels on which the New River Valley sites may be considered significant. These levels of significance, however, are general in nature, such as "broadening knowledge," and "have far reaching implications on the understanding of human behavior." Thus no particular significance has been attached to any specific site.




FLORA AND FAUNA

VEGETATION COMMUNITIES

All of the land within the New River Valley area was originally covered with dense forests containing a large variety of species well adapted to each site. Over the years, most of the original forest land has been cleared one or more times for other uses, and today 78 percent of the forest cover is on the mountaintops and upper slopes and 12 percent on the rolling uplands. The highly productive moist soils of the coves, lower slopes, and valleys supported mesic hardwoods, hemlock, and white pine. Many of the same species, together with short-leaf pine, Virginia pine, and others well adapted to less fertile, drier soils, cover the upper slopes and mountaintops, while chestnut oak, scarlet oak, shortleaf pine, and pitch pine were dominant on the dry, shallow soils on valley wall. The American chestnut, once a major species in the forest stands of the project area, is virtually extinct. The chestnut blight which attacked this valuable commercial species continues to kill those seedlings which occasionally sprout from old stumps and seed scattered throughout forests of the eastern United States.

The **Oak-Hickory Hardwood** type is located on steep slopes of the valley wall and ridge top, and accounts for approximately 80 percent of the forest cover in the valley. Most of these sites are located on dry, shallow soils that sustain white and yellow pine, hemlock, oak, hickory, maple, elm, and eastern redcedar. The **Cove Hardwood** type is located along the steep mountain streams that feed into the New River. The moist soils of draws and coves support a diverse mixture of beech, black gum, yellow poplar, yellow birch, black locust, maple, oak, hickory, and ash. The upper elevations support hemlock and pine species. At high elevation along the river, the valley coves and draws, and moist areas on very steep slopes are populated primarily with hemlock, pine, and a few hardwood species. On **North-Facing Slopes,** the understory growth for the Oak-Hickory and Cove Hardwoods consists of dense rhododendron and mountain laurel thickets, with scattered species of huckleberry, alder, hydrangea, grapevine, dogwood, sourwood, sassafras, and silver-bell. The south-facing slopes have all of the above mentioned species except for mountain laurel and rhododendron.

Due to land use practices over the past 100-200 years (land clearing, grazing, wildfires) the value of timber within the study area is relatively low. The most productive sites are utilized for farming, while forest cover is mainly on marginal sites. A

SOUTH FORK NEW RIVER SCENIC RIVER STUDY

ashe and alleghany co. north carolina



vegetation communities

legend

- hardwood forest
- pine forest
- clearcut area
- pasture / agriculture
- north-facing slope

relatively small part of the present forest (17 percent or 114,470 acres) is on sites of above average site quality (soils capable of growing 120 cubic feet or more of timber per acre per year) and these areas are in private ownership. White pine is being replanted on marginal pasture land and on steep slopes that have been clear cut. This species is being grown for its commercial value in furniture and Christmas tree sales. The pine is planted on steep slopes and on dry, shallow soils. Trees in these dense stands compete among themselves for open sunlight that pines must have to survive. For this reason, few plants are found in the understory, only several species of blueberries and herbaceous plants are present. This forest is not very productive for wildlife; however, the dense crown growth can provide good nesting and roosting habit.

Approximately 10 percent of the ridge-top forest is covered by a **Mixed Pine and Hardwood** community. A mixture of hardwoods, pines, shurbs, and herbaceous species composes the community. Such areas are common in places where the hardwood forest has been clearcut or heavily logged and the resulting stumps and damaged understory are allowed to regenerate. This forest type is not very attractive; however, it does contain a considerable diversity of plant life that can be used as source of food for wildlife.

The **Southern Bottomland Hardwood** forest is found on the alluvial soils of the floodplain terrace. Primary species consist of beech, maple, willow, and sycamore; lesser species of ash, oak, and hickory also exist along the river bank. In most cases, this forest type has been cleared for agricultural practices, and only a remnant stand exists along the river bank and field drainage ways.

A list of **rare and endangered species** of vascular flora in the project area has been made by various State personnel. They have been located in Alleghany, Ashe, and Watauga Counties, and it is probable that they exist within the valley of the Scenic River. Four floral species inhabiting the area have been identified by the Fish and Wildlife Service as possible candidates for listing as Endangered or Threatened Flora in accordance with the Federal Endangered Species Act of 1973. These are the spreading avens (**Geum radiatum**), a rattlesnake root (**Prenanthes roanensis**), the wretched sedge (**Carex misera**), Carey's saxifrage (**Saxifraga carevana**), and the Carolina saxifrage (**Saxifraga cardiniana**).



RARE AND ENDANGERED VASCULAR PLANTS*
OF NORTH CAROLINA
LOCATED IN VICINITY OF PROJECT AREA

Species	Range In N. C.	Preferred Habitat	Comments	Status
Taxus canadensis	Ashe & Watauga Counties	Low, rich woods,	At Southern limit; rare.	Rare and endangered.
Carex misera	Ashe, Buncombe, Macon, Mitchell, Swain Counties (Georgia & Tenn.)	Rocky crevices & balds.		Rare and endangered.
Populus granididentata	Ashe, Haywood Counties (Va., Tenn., Ky., W. Va.)	Dry woods & rock outcrops.	N. C. Southern Limit	Rare and endangered.
Hypericum buckleyi	Southern Appalachians	Balds & rock ledges.	Mountain endemic	Threatened
Panax quinquefolium	Mountains & Piedmont	Rich woods.	Exploited.	Threatened
Saxifraga cardiniana (Carolina Saxifrage)	Ashe, Alleghany, Haywood, Jackson, Macon, Mitchell	Mountains of N. C., Virginia Tenn.	Moist rocks & seepages	Very rare, localized endemic and endangered
Carex purpurifera (Purple Sedge)	Ashe, Clay, Haywood, Macon	Mt. of N. C., Georgia, Tenn., Kentucky.	Rich woods	Rare and endangered
Cymophyllus fraseri (Fraser's Sedge)	Southern App.	Mt. of N. C., Penn, W. Va., Va.	Rich woods & stream banks	Endemic and threatened
Lillium grayi (Gray's Lilly)	Ashe, Avery, Mitchell, Buncombe, McDowell Watauga, Yancey	Mt. Va., N. C. Tenn.	Meadows, Forest openings, & Balds.	Threatened
Saxifraga careyana	Appalachian Southern	N. C. Tenn., Va. Mts.	Moist rocks & seepages	Localized endemic Threatened
Geum radiatum	Ashe, Avery, Stokes, Mitchell, Watauga	Mt. N. C., Tenn.	Rocky balds	Localized endemic Endangered
Rhododendron bakeri	Ashe, Macon & Swain	Mt. N.C. Georgia, Tenn., Ala., Ky.	Balds, open woods, and high elevations.	Endemic, Threatened
Prenamthes roanensis	Southern App.	Mt. N.C., Tenn. Ky.	Road banks and borders	Rare, Threatened
Rhododendron vaseyi	Mountains of N. C.	Bogs; spruce forest		Exploited and Threatened

*N. C. Department of Agriculture: *Endangered and Threatened Plants and Animals of N. C.,* N. C. Museum of Natural History. Raleigh, 1977.

FAUNA

The Wildlife population in the New River Valley exhibits the typical distribution expected in a rural, agricultural area. Both large and small game animals are present as well as the nongame species of songbirds, reptiles, amphibians and some types of fish. Sixteen animals on the State's rare and endangered list are represented in the area's population.

Whitetail deer is the main big game animal found in the New River Valley in Ashe and Alleghany County. The deer populations are generally light to moderate throughout the area. Wild turkey is also a popular big game species. They are found generally on the stretch of river between the N. C. 163 highway bridge and the Virginia State Line. Wild turkeys prefer the habitat found in isolated patches of forest along the river. The black bear, another principal big game species, has become less important over the years because great hunting pressure has reduced the bear population. Those remaining are found along the ridges and well outside the river corridor.

Forty-five percent of the area is in pasture or some form of cultivation. This large percentage of open land along the Scenic River is responsible for the large populations of small game animals including cottontail rabbit, bobwhite quail, doves, fox and ground hog. Small game animals of the forest include the grey squirrel and ruffed grouse.

The river surface is a small percentage of the habitat in the valley. It supports a light population of waterfowl consisting mostly of wood ducks. Furbearers, including opossum and raccoon, beaver, mink, and muskrat are also found in the river and its tributaries.

Nongame wildlife species present include songbirds, small mammals, reptiles and amphibia. A number of terrestrial species may be found in the two-county South Fork New River area are listed as rare or endangered by the Endangered Species Committee of the Department of Natural and Economic Resources in a "Preliminary List" issued in June 1973. They include the long-tailed salamander (**Eurycae longicauda longicauda**), ravine salamander (**Plethodon richmondi**), bog turtle (**Clemmys muhlenbergi**) the invertebrate (**Dixioria dactylifera**), and the golden eagle (**Aquilla chyrsaetos**).

A wide variety of game and nongame fish, both warm and cold water types, and nine fish on the State's rare and/or endangered list are known to exist in the 26.5-mile Scenic River. Also, one endangered snail species is found in the New River Study area. The main sport fish of the basin are trout in the tributaries of the upper reaches and smallmouth bass from the main stream. It has been stated that the New River is perhaps

the most popular smallmouth and rock bass fishery in the State.

The streams of this watershed produced a high number of invertebrate organisms, due primarily to clean water with little siltation. The following groups of invertebrates, in order of decreasing abundance, were found in bottom samples: Ephemeroptera, Plecoptera, Diptera, Trichoptera, Gastropoda, Coleoptera, Pelecypoda, Hydracarina, Annelida and Decapoda. The number of organisms at individual stations ranged from 10 per square foot to 143 per square foot with the average for all sample stations being 55.08 per square foot.

The rare or endangered aquatic species reported by the State from the South Fork New River include the aquatic snail (**Spirodon dilatata**), The New River shiner (**Notropis scabriceps**), the Kanawha minnow (**Phenacobius teretulus**), the bigmouth chub (**Nocomis platyrhynchus**), the tongue-tied minnow (**Parexoglossum**), the bluntnose minnow (**Pimephales notatus**), the Kanawha darter (**Etheostoma kanawhae**), the blackside darter (**Percina maculata**), the sharpnose darter (**Percina oxyrhycha**), and the flathead catfish (**Pylodictis olivaris**). These species are important to North Carolina because the New River basin is the only place in the State where they exist. They also occur only in North Carolina and not in the Virginia segments of the river because of the man-made falls structures.

Several fish and shellfish species inhabiting the study area may be candidates for listing as endangered or threatened in accordance with the Endangered Species Act of 1973. They are the New River crayfish (**Cambarus chasmodactylus**), the dilatate diamond-shaped snail (**Spirodon dilatata**), the New River shiner, (**Notropis scabriceps**), the bigmouth chub (**Nocomis platyrhynchus**), the Kanawha minnow (**Phenacobius teretulus**), the kanawha darter, (**Etheostoma kanawhae**), and the finescale saddled darter (**Etheostoma osburni**).

The most significant factor influencing the fishery of the South Fork is the sedimentation from dirt and gravel roads, and poor agricultural and forestry practices. In the past, the usage of the river as a local dump also impacted the fishery. Thermal pollution is an increasing threat to the river as stream banks are stripped of vegetation as agricultural lands and second home developments expand.

In general, the North Carolina Wildlife Resources Commission reports the fishing pressure to be light and expects the rate to increase approximately four times faster than hunting in the area.



MASTER PLAN STUDY

THE NEW RIVER: A SCENIC RIVER

The criteria presented in the Natural and Scenic River Act of 1971 describes river qualtiy that is necessary for inclusion in the system. Items such as river length, boundaries, water quality and flow, public access, and environmental quality were defined and used to evaluate the New River. The required river length is "no less than one mile." Ninety miles of river exist in North Carolina, and by the Legislative Act, 26.5 miles of the river were designated for the study. The year-round water flow is continuous and is not subject to any substantial withdrawal. Field irrigation is the primary use and requires only seasonal withdrawals. No impoundments are located on the river course, and only two low water bridges are present.

The water quality "shall not be less than that required for class 'C' waters as established by the North Carolina Board of Water and Air Resources." The entire length of the 26.5 miles is classified 'C', and no significant point source is emitting waste into the river. The primary pollution source is non-point, coming from surface runoff on agricultural fields. Undetermined amounts of fertilizer, pesticides, and livestock pollution are carried into the river; however, no adverse effects have been documented by the Water Quality Section. In the future, the primary threat to the water quality will come from new housing along the river and from the growth of existing communities upstream.

The environmental quality described for a scenic river is "largely undeveloped, pastoral landscape characterized by dispersed agricultural uses and rural settlements including low density residential developoment." The New River exhibits features characteristic of the pastoral river. The stream pattern resembles the pastoral meander in that the flow frequently reverses itself in 'U'-shaped bends and 'S'-turns. The irregularity of the meander becomes more pronounced as the river size increases downstream. The original forest has been removed for agricultural use, primarily pasturing and cultivation of pasture crops. The waterway is easily visible as it meanders through open pasture and crop land. However, where the valley narrows and slopes increase, the waterway is screened by overhanging trees. Large rock outcrops are exposed on bluffs. The average channel gradient of the 26.5 miles of scenic river is five feet per mile, and for this reason, the river is considered an amateur canoe trail.

As to be expected, the bed material of the streamway varies from gravel to silt depending on location. The stream banks are generally low and near-vertical, and the sand and silt along the

bank is easily eroded by the water flow. The coarser grade material is usually added by a steeper-gradient tributary that flows directly into the river, such as Dog Creek, or where the water action is directly eroding a valley wall.

As defined by the Scenic River Act, access to the river valley may include roads that run parallel to the river course, and water crossings for motorized vehicles. The 26.5-mile stretch of scenic river has approximately 17 miles of State secondary roads that run parallel to the river. Many of them are one-lane gravel roads without a written right-of-way granted to the North Carolina Department of Transportation. Only two of these roads are two-lane, paved highways, SR 1595 and SR 1567. An additional three miles of the river have unimproved private farm roads, and only six miles do not have roads fronting the river. However, part of this six miles does have abandoned road alignment adjacent to the river.

In summary, the designated study length of the New River qualifies to be included in the State Natural and Scenic River System as a State Scenic River. The river met the specified criteria for river length, water flow and quality, environmental quality, and public access. The next step in the process was to define the proper boundaries and protection devices for the Scenic River.

AREAS TO BE PROTECTED

The Division of Parks and Recreation is required by law to prepare a management plan which will recognize and provide for the protection of the existing undeveloped scenic and pastoral features of the river. To achieve these ends, the Division is authorized to acquire by gift or purchase up to 1,500 acres in conservation easements and a maximum of 400 acres in fee simple. The 1971 N. C. Natural and Scenic River Act defined the boundaries of a scenic river as the visual horizon or a distance from each shoreline not less than 20 feet in width or more than 320 acres of land per mile.

Based on geologic characteristics, forest communities, soils and slope, and scenic character, lands adjacent to the river have been identified for protection. Two situations occur on the river that require protection. The first situation includes steep valley walls that are still in forest cover. Rock outcrops are present, and the soils are highly erodible and stony. The scenic value of this feature is very high and should be protected within the visual corridor of the river. The visual corridor should consist of the line-of-sight that an individual can see from the river into the surrounding landscape during the winter season. Approximately 861 acres of oak/hickory forest, rock outcrops and bluffs were identified by the analysis. The river bluffs are located on the outside curve of a river meander, topographic

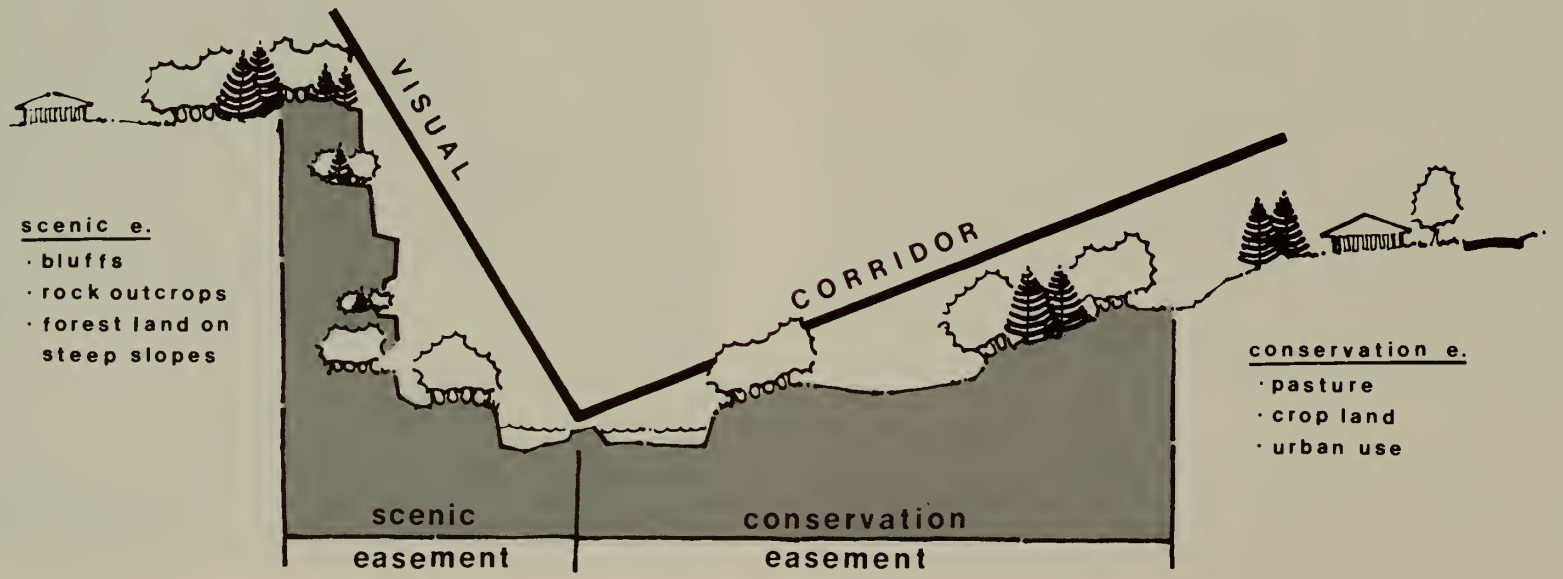
section 4.; and the most dramatic ones exist along river miles 1 and 2. The remaining oak/hickory forests are on steep slopes of 45 to 65 percent, and cannot be used for agricultural purposes. This situation occurs in topographic sections 3 and 4.

The visual quality of these areas should be protected by a conservation easement known as a scenic easement. This type of easement limits the actions which may change or affect the quality of the visual experience on the property. A wide variety of restrictions can be written into this type of easement, and they normally involve restrictions on disturbing the natural character of the land, dumping, cutting trees, excavation, building structures, and many others. It is even possible to draw restrictions which permit limited residential development under such controls as a small number of single-family residences, set back from the water and screened by vegetation. Restrictions are to meet the needs of grantors who wish to use the property but are willing to guarantee the appearance or essential character of the land to an extent acceptable to the grantee.

The remaining areas along the river are either crop and pasture land, or abandoned fields that are being converted to urban uses. The entire 26.5-mile Scenic River is affected in this way: approximately 80 percent of the land area in the valley is in



agricultural or related use. This means that the line-of-sight from the river extends for several miles in low, broad floodplain terraces typical of topographic sections 1, 2, and 4. For this reason, the visual horizon will not be a practical boundary for the Scenic River. In these areas, the primary objective for river protection will be to maintain the water quality of the river from agricultural and urban surface runoff. A filter strip width will be determined that is based on three measurable variables: soil erodibility, steepness of slopes, and intensity of adjacent land uses. Such an easement will have a minimum width of 25 feet along the river at any location where the soils are slightly erodible (as determined by the SCS soil erodibility factor), where the slopes are 0-1 per cent (flat), and where the intensity of adjacent land uses is similar to that of a natural forested landscape. Such uses include well maintained permanent pastures, farmsteads, and single-family dwellings on lots of one acre or more. However, this minimum width will increase in direct proportion to increased soil erodibilty, increasing steepness of



slopes, and increasing intensity of adjacent land uses (as measured by rainfall runoff coefficient). Thus, a specific location with highly erodible soil, a steep slope, and a high intensity of adjacent land use (multi-family apartments, etc.) will require a substantially wider filter strip.

Scenic easements covering 860 acres are required to protect the visual quality of river bluffs and wooded steep slopes, leaving approximately 640 acres available for filter strips on agricultural land. The average width for this conservation easement is 150 feet for one side of the river. The actual width of the strip is being determined by on-site inspections made by representatives of the Division of Parks and Recreation.

This conservation easement is an agreement by the landowner not to take certain specified action on or regarding his property. The primary objective of the easement is to prevent intensive development along the river bank. High density residences, apartments, businesses, and industries will be restricted on lands covered by the easement, and the landowner will be encouraged to continue to farm or use the land as he had; this includes cultivating crops, raising cattle, or growing trees and allows changes such as crop rotation, or conversion of pasture to crop land or vice versa. In addition, the landowner will be allowed to lay irrigation lines across the easement land to irrigate bordering crop lands, and livestock can cross the easement to drink from the river.

General Easement Provision: The Division is requesting that easements be perpetual. This will allow the land, regardless of who owns it now or will ever own it, to remain in its natural state forever. However, the State of North Carolina will have no authority over private lands not covered by easements. The landowner may still sell or lease the land covered by the conservation easements, and it may be passed on to the heirs. The easement follows the title to the land.

Where trails are not designated, river users will not be allowed on the conservation easement, and in no case will the general public be allowed to cross private land to gain access to the river or to trails along the river. Public access will be provided at designated points along the river.

Tax Benefits to the Landowners: Land covered by a conservation or scenic easement has a lower market value since the owner gives up certain rights on that land. The lower value of the land would qualify it for reduced property and estate (death) taxes. The burden is on the property owner to inform the county assessor that an easement has been conveyed to the State; however, the State will pay for title searches, land surveys, appraisals, and legal fees connected with preparing the agreement.

The Internal Revenue Service allows an individual to deduct the value of a perpetual conservation easement donated to a government agency as a charitable contribution. The State of North Carolina income tax laws allow this same tax advantage.

In general, the value of a conservation easement is equal to the difference in market value of the land before and after the easement has been granted. The value of a particular landowner's easement can be determined only by an independent appraisal which would indicate the value of the property before and after the easement has been granted.

SOUTH FORK NEW RIVER SCENIC RIVER STUDY

ashe and alleghany co. north carolina

mt. jefferson stete perk

little phoenix mountain state scenic trail

hiking, bridle & canoe trails

hiking end canoe treils

canoe trails only

hiking end canoe treils

site 1

rest stop no. 1 primitive cemping

site 2

rest stop no. 2 primitive camping

twin forks

site 3

30 25 20 15 10 5

vehicular access/parking
river access
family & group picnicking
primitive camping
information display
interpretive trail
bridle trail access

vehicular access/parking
river access
interpretive workshop
family & group picnicking
primitive camping
tent & trailer camping
bridle trail access

vehicular access/parking
river access
family & group picnicking
primitive camping
information display
interpretive trail

wagoner rd. access area (site 1)

SR 1592

SR 1695

US 221

SR 1567

SR 1560

SR 1559

SR 1309

SR 1308

twin forks

SR 1313

NORTH CAROLINA

VIRGINIA

alleghany co. access area site 3

NC 113/93

rest stop no.1

u.s. 221 access area (site 2)

US 221

rest stop no. 2

legend

- scenic easement
- fee simple acquisition
- conservation easement along river bank (average 150 feet wide)
- vehiculer access
- hiking trails
- bridle treils

master plan

PUBLIC ACCESS AND RIVER RECREATION

Public access to the river will be provided by three state-owned and maintained access areas, and one privately owned campground, Twin Forks. They are spaced along the river as proposed in the conceptual recreation program, and reflect day trip intervals for canoeing, hiking, and rafting. The first access area is located at river mile 26, dowstream from Dog Creek. It is located at the terminus of SR 1590 in Ashe County, and will be referred to as the Wagoner Road Access Area. The next public access is located approximately 10 miles downstream from Wagoner Road, at river mile 15. The site is located on the west side of the river, and access is provided by U. S. 221, the major tourist route through the river valley. In addition, the 221 access area will be a centralized location for administrative and management services, and will serve as a river access for a potential Little Phoenix Mountain State Trail Corridor. The final public access is located at river mile 1, south of the North Carolina/Virginia boundary in Alleghany County. This area will be the final takeout point for all canoe and rafting trips and will be referred to as the Alleghany County Access Area. Access is provided by a one-lane gravel road, SR 1313, that begins near the town of Mouth of Wilson, Virginia, and terminates at the site. One other access point exists along the river at mile 6, the Twin Forks Campground. It is a privately owned recreation area that offers picnicking and primitive tent camping.

Two rest areas are also to be located along the river for the convenience of river users. The first stopover is located at river mile 21, between the Wagoner Road and U.S. 221 Access Areas. The primary purpose of this area is to provide a rest or lunch stop for canoeists, and an overnight primitive camp for hikers. The second area is located on river mile 10, between U.S. 221 and Twin Forks Campground, and will serve the same purpose as the first rest stop.

All access areas and rest stops except Twin Forks will be purchased in fee simple ownership by the State of North Carolina. By Legislative Act, the Division of Parks and Recreation is authorized to acquire 400 acres for this purpose. The acquisition package of recommended land for all of the access areas and rest stops totals 511 acres. This proposal exceeds the Legislative limit by 111 acres. The additional land is needed to protect the visual character of each site. A detailed explanation is given with the description of each individual site development plan.

The recreation program includes a 25-mile canoe trail from Wagoner Road to the Alleghany County Access Area. The trail can be broken into either a two or two and one-half day trip. The two-day canoe trip would require the party to launch at Wagoner Road Access Area, and canoe 11 miles to U.S. 221 Access Area the first day. An overnight primitive camp is available here, and the first rest area would be used for a lunch stop. The second day, the party must canoe 15 miles to the Alleghany County Access Area. The two and one-half day canoe trip requires the same 11-mile trip to the U.S. 221 Access Area; however, the second day would consist of a nine and one half mile canoe trip to the Twin Forks Campground. For the third day, a leisurely five-mile trip remains to the Alleghany County Access Area. In both the two and two and one-half mile journey, the second rest area would be used for a lunch stop.

Rafting trips will take much longer on this slow-moving river. An average day trip for a raft is approximately eight miles. A

long day trip of 11 miles is required from Wagoner Road to U.S. 221 access area, or a short day trip of five miles is available from Wagoner Road to Rest Stop 1. A more reasonable day trip exists from U.S. 221 to Twin Forks, approximately nine and one half miles. From Twin Forks, only five miles remains to the Alleghany County Access Area. Rafting on this river is a slow and tedious activity. During low or normal water flow, the river can be easily canoed by a novice, and the quickest and most interesting trips are by canoe. This river should not be considered challenging for experienced rafters.

Hiking and backpacking are the next linear activities accommodated in the scenic river program. Twenty miles of trails are proposed for the more scenic sections of the river. The most extensive section of trail is proposed from Wagoner Road to the second rest stop downstream from U.S. 221, approximately 15 miles. On good trails in rough terrain, a backpacker will average 10 miles per day. An easy day trip exists from Wagoner Road to U.S. 221, and a rest stop would be available at river mile 21. The backpacker has the option of establishing a base camp at the rest stop, and then exploring the remaining section of river. The other possibility consists of a five-mile pack-in trip to the second rest stop downstream from U.S. 221. The entire section from Wagoner Road to the second rest area contains the most significant river meanders and mountain-like terrain along the river corridor. Beginning at Wagoner Road, the trail is located on the east side of the river, it crosses the river at the low water bridge on SR 1595, and continues along the west side of the river to the first rest stop, and then on to the U.S. 221 Access Area. From this point, the trail crosses the river by cable raft and continues north along the east side of the river to the second rest stop. Past this point, the river valley widens, the stream straightens, and the primary land use is agriculture. Along this five-mile stretch from Rest Stop 2 to Twin Forks, only five areas were identified that would require protection by scenic easement. No trails are proposed along this stretch of river. Hikers would return to the U.S. 221 site from the second rest area.

The next section of trails is proposed from Twin Forks Campground to the Alleghany County Access Area, approximately five miles. The most dramatic bluffs and rock outcrops exist along river miles 1 and 2, and at the confluence of the North and South Forks of the New River. The trail is located on the west side of the river opposite the north-facing bluffs, and crosses the river at the low water bridge in Ashe County, SR 1549. This trail would be an easy day trip for leisure hikers.

An 11-mile **horseback riding trail** is the final linear activity proposed along the Scenic River. It is located along the river from U.S. 221, to the Wagoner Road Access Area, and will be

provided in coordination with a potential State Trail Corridor that could link Mt. Jefferson State Park and the U.S. 221 Access Area along the Little Phoenix Mountain Corridor. The potential 11-mile trail along the State Trail Corridor, when combined with the Scenic River Trail, would provide a 22-mile bridle trail for the area.

The trail begins at the Wagoner Road Access Area, and is located on the east side of the river for one mile. At river mile 25, the trail crosses the river at an existing river ford, and continues downstream on the west side for the next four miles. The trail then crosses over to the east side on the high water bridge on SR 1595, and follows SR 1601 for three miles until it crosses the river again at the low water bridge near river mile 18. From here, the trail is located on the west side until it terminates at the U.S. 221 Access Area.

Trail Location: All hiking and bridle trails will be located within a scenic or conservation easement. The trail alignment should be located on the lower edge of the second floodplain terrace because the first terrace is flooded too frequently for trail development. The right of linear public access along the easement would be included in the written agreement, and no additional land beyond what is agreed upon in the scenic or conservation easement will be necessary for trail development. In addition, the Division of Parks and Recreation will be responsible for designing and maintaining fence crossings for hiking and bridle trails. The landowner's access to the river will not be altered because a trail exists on the easement.

All trails will consist of a natural tread. The hiking trails will be approximately 18" wide, and the bridle trail will be three feet wide with a 10-foot overhead clearance. In most cases, the hiking and bridle trails are located on opposite sides of the river. The bridle trail follows existing or abandoned roads, and the hiking trail is located on agricultural land and on steep forest slopes. In two areas, the hiking and bridle trails are located on the same side of the river, from river mile 26 to 25, and river mile 18 to 16.5. Use will dictate whether one or two trail alignments are needed. The hiking trail will be developed first, and the bridle trail later.

Access to any trail will be allowed only at designated access areas and along a trail alignment that crosses a public right-of-way such as a public road. The general public will not be authorized to cross a landowner's private property to reach the river or trail. Personnel from the Division of Parks and Recreation will be responsible for maintaining all trails within the easement. If a particular easment does not include public access and a river user is on the property, the landowner can order the trespasser off his land or call a Division representative or local law enforcement agent.


SITE STUDY

As a result of the planning that preceeded the preliminary master plan, general site locations were identified according to criteria specified in the conceptual and river management plans. Further investigation and analysis were necessary to refine these areas to the point where site plans could be designed. This analysis involved the study of the natural and man-made determinants and limitations, the perceptual characteristics of the area, and resulted in a delineation of the suitable or unsuitable developable areas in each general location. This "process of elimination" led to identification of specific land areas which exhibit minimum limitations for development.

In order to illustrate this process, it is necessary to narrow the range or scale of this discussion to one land area which can be used as an example. It should be noted, however, that this method has been followed in drawing the final recommendations for the Master Plan and each individual site, although all of the sites will not be discussed in this section.

The site chosen for detailed analysis is the site closest to the North Carolina/Virginia State Line, or the Alleghany County Access Area. It is approximately one and a half river miles from the North Carolina/Virginia State Line and encompasses about 200 acres. The physical characteristics of this particular area lend themselves very well to illustration of the analysis procedure, while the layout of both the landforms and man-made determinants exhibit problems similar to the other general site locations. For illustration of the process, this one site will be used for the various descriptions, making it easier to understand how different studies resulted in the final site plans.

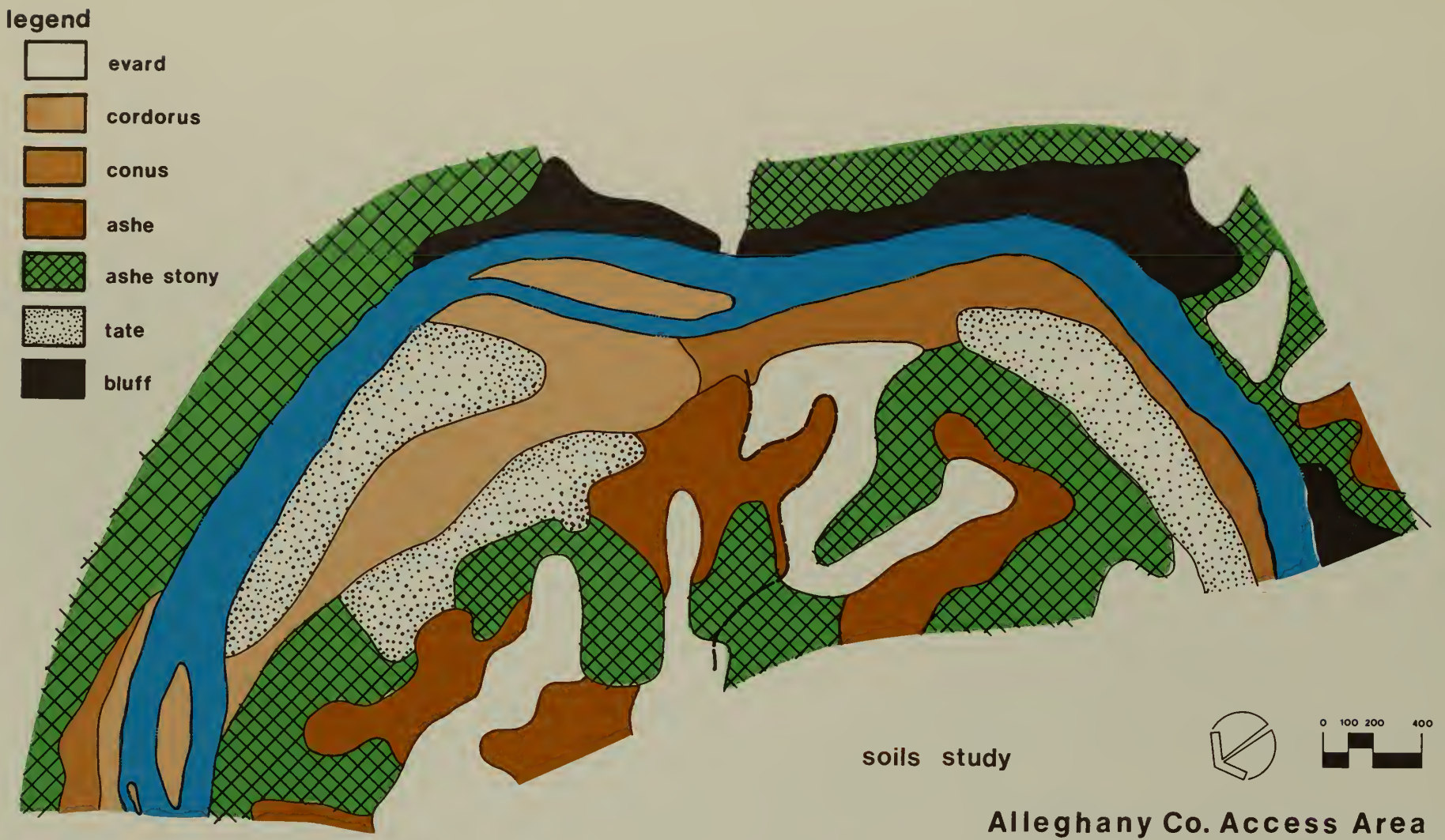
NATURAL DETERMINANTS

Limitations affecting possible uses of the land are exhibited by both natural and man-made factors. Natural limitations include geology and soils, topography, slope, elevation, floodplains, and ground and surface water.

As identified by the U.S.D.A. Soil Conservation Service, there are five soil types on the site. Two of these soils are within the floodplain of the New River: these are the Codorus and Comus soils. Both are subject to very frequent floodings, have a seasonally high water table between 18 inches and 30 inches below the surface, and depth to bedrock greater than six feet.

The Tate soils are generally located on the gently to strongly sloping upland draws and at the foot of slopes. The seasonally high water table is found at a depth of about 30 inches, and bedrock is over six feet below the surface. The remaining soils are the Evard and Ashe series, both of which are present on the sloping ridges and side slopes of the hilly portions of the site. Depth to the water table for both is greater than six feet, but bedrock is present under the Ashe soils at depths less than four feet, while it is greater than four feet beneath the Evard series.

Analysis of the soil suitability matrix will show that the Codorous and Comus soil series impose severe restrictions on all recreation-connected activities except in three cases: Codorous soils only have moderate limitations involving trails, and Comus soils only have moderate limitations where picnicking is concerned and slight limitations for trail construction. The Tate series exhibits only moderate limitations on development of recreation-related facilities except in locations where excessive slopes occur. In these areas, campsites or trail locations must be thoroughly investigated in order to prevent the possibility of erosion.


legend
evard
cordorus
conus
ashe
ashe stony
tate
bluff
soils study
0 100 200 400
Alleghany Co. Access Area

The upland soils, Evard and Ashe series, impose varying limitations on the different activities, ranging from slight to severe depending on the percentage of slope. Comparatively, the Evard soils are the more difficult of the two soils to work with because the slopes on it are generally more severe than those of the Ashe soils. Even though the Ashe series is somewhat less limiting on most activities, both soils have severe ratings for septic field locations, but on-site studies will be necessary before construction of any facilities in any case. It should be remembered that the rating "slight soil limitations" is given soils that have properties favorable for the particular use; "moderate limitation" is the rating given soils that have properties moderately favorable for the rated use, and means that some modification of the plans or the soil may be necessary. "Severe soil limitations" means that the soil has one or more properties unfavorable for the rated use, and means that special design, major soil reclamation, or intensive maintenance may be necessary for the particular rated use.

Most of the soil ratings are based on slope severity, making it the major limitation to development on the site. About one-half of the area consists of slopes greater than 15 percent. For all practical purposes, such slopes are considered unusable for most park facilities or activities, but some activities, particulary trails, can be accommodated on these inclines. Most park activities can occur on 8-12 percent slopes, while practically all can be successfully provided on slopes under eight percent. This is especially true when these slopes are not contained within floodplain boundaries.

Floodplain boundaries on the site are well defined by the presence of the two alluvial soil series, Codorous and Comus. Both are level or nearly level soils within floodplains, and are basically sediments washed from other soils. The U.S. Geological Survey has further identified the 100-year floodplain boundaries by specific elevations. The maximum peak discharge of the river was 52,800 cubic feet per second during the 1940 flood, which had a recurrence interval greater than 100 years. The river stage was approximately 20 feet above median stage at the peak of that flood, and reached an elevation of 2,420 feet above mean sea level.

The majority of the site is covered with pasture land or fallow fields at this time. The pasture land is covered with grasses, sumac, blackberries and various briers. These open areas lend an airy look to the landscape and serve to blend the site in with the surrounding lands which are also in pasture along the slopes and hilltops.

The hardwood forests on the site consist largely of red and white oaks, hickory and tulip poplars with smaller species, such as red maple, sugar maple and dogwood covering the understory. Along the north-facing slopes, which remain cooler and in shade, rhododendron and mountain laurel exist in abundance. These two species are very evident along the bluffs on the eastern side of the river opposite the site.

The remaining vegetation types exist on the site only in very small areas. There is only one relatively large stand of loblolly pine within the site boundaries, and it covers only about three acres. The mixed forest occupies about eight acres on the steep slopes at the lower end of one of the southerly-trending ridges. The rest of the site, west of the river, is the pasture and field mentioned earlier.


legend
0 – 2 percent
2 – 8 "
8 - 12 "
12 + "
slope analysis
0 100 200 400
Alleghany Co. Access Area


legend
2400'- 2420'
2420'- 2520'
2520'- 2620'
2620' +
elevation study
0 100 200 400
Alleghany Co. Access Area

MAN-MADE DETERMINANTS

Man-made limitations affecting possible uses of land include method and route of access, land uses existing in the study area, property lines or ownership patterns, the presence of significant historical or archaeological sites, plus limitations exhibited by legislation, such as zoning ordinances, soil and erosion control requirements, public health and safety codes, and floodplain regulations. These factors must be examined in an analysis of a site for its development potential and combined with the other limitations to get an accurate picture of the site's suitability.

Access to the study site is via the New River and S.R. 1313, Alleghany County. At the present time, this is an unimproved gravel road which originates in Virginia and winds its way generally along ridge lines on its way to the site. This road will need upgrading in order to withstand the increased traffic that will be generated by recreational development.

Another vehicular access route could be possible from Alleghany County S.R. 1310. In order to provide this route new road construction would be necessary; this construction could either run along the edge of the river or use existing jeep trails to tie into the alignment of S.R. 1313 above the site. The road alignment parallel to the river is undesirable because of the visual and environmental impact that road construction would have so close to the water. In addition, S.R. 1313 approaches the river in such a way that the viewer is presented with quite a few scenic vistas of the river and the surrounding lands. For all these reasons, the best site entrance would be best via S.R. 1313.

The land uses both in and around the study site on both sides of the river are similar. As stated in the vegetation discussion, most of the site is either in pasture or fallow fields. The rich floodplain soils along the river banks are apparently being farmed during the growing season, with corn appearing to be the principal crop being produced. The steeper slopes along the approach to the site are heavily wooded, and timber production is one of the more important uses historically associated with this type of terrain. The open gentle slopes are generally used as pastureland for horses and cattle. These grazing lands are dotted here and there by trees, and in places by the remains of old orchards.

On the opposite side of the New River, the steep bluffs are heavily wooded with both old hardwoods and well developed rhododendron thickets. As on the study site, the more suitable slopes and ridge tops are mostly utilized for pasture, except that much of the highland is being farmed and apparently is in cultivation most of the year. The timber has been cut from some of the wooden slopes, and a small percentage of these areas has been replanted with pines.

At the Alleghany County Access Area, the ownership pattern is very simple. The entire site is owned by the Appalachian Power Company, including the bluffs and quite a bit of the open pasture land on the east side of the river. However, the property

boundaries on the other sites sometimes involve more than single owners. These situations will be explained in more detail in the description of each final site plan.

Within the boundaries of the Alleghany County Access Area, seven archaeological or historic sites have been identified. Three of the sites are directly related to homesites, while the remaining four sites are concentrations of cultural remains tentatively dated as early as 6,000 B.C.

The first of the homesites is that of the McMillan family. The complex includes a house ruin, a shed, a springhouse, a barn, corncribs and a cemetery containing at least six marked graves. The cemetery gravestones carry dates ranging from 1830 to 1936. The buildings have stone foundations, and some of the few remaining walls have been reinforced with concrete. A couple of the buildings still have tin roofs, but the house itself is totally in ruin.

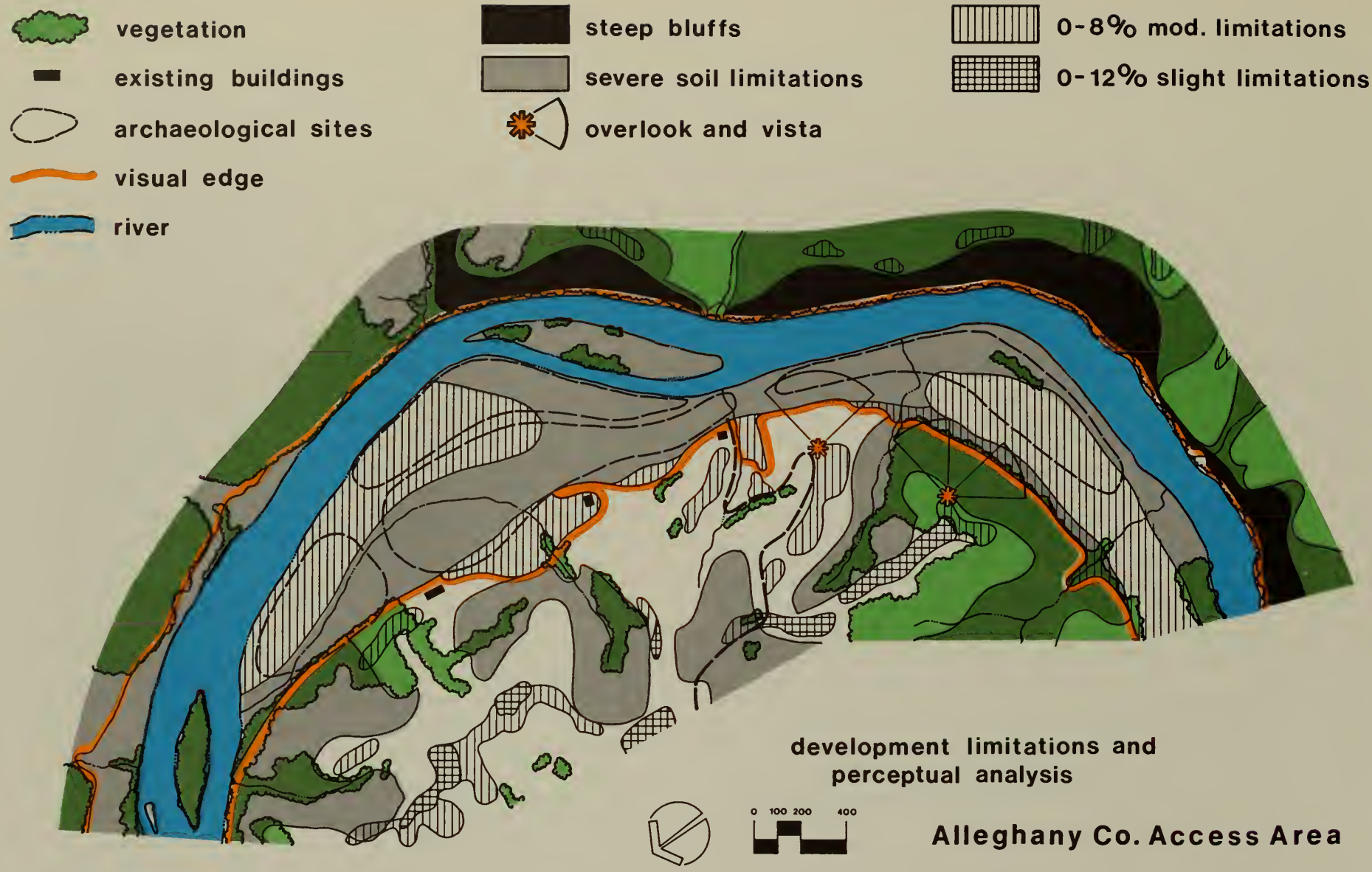
The other two homesites belonged to branches of the Sturgill family. The first house was a mid- to late Eighteenth Century farmstead, and the second Sturgill house was built sometime later. This second homesite is located in an apple orchard on the hillside above the floodplain, but is not readily visible because brambles now cover the area. The house was apparently built about 1850 by the children of Francis Sturgill.

The four sites which contained sufficient cultural remains to be classified as significant are all in the floodplain area inside the river bend. These sites all run roughly parallel with the river's flow and on the first or second terrace above the water. They have all been cultivated for an estimated 200 years. Surveys on these sites have collected a wide variety of artifacts, including projectile points, blades, scrapers, choppers, unfinished flakes and ceramic sherds. Enough material has been found to make these sites potentially valuable for ethnohistorical studies; therefore, they should be avoided as much as possible when locating permanent facilities.

Land-use planning has been undertaken by both counties in the project area, Ashe and Alleghany Counties; however, adoption and implementation of these plans have not been successful due to citizen opposition. In Alleghany County, the State health and building codes are enforced, and the Board of Commissioners has stated publicly that it will adopt a floodplain ordinance to control the section of the New River flowing through Alleghany County. A decision on the land use plan should be forthcoming within the next year.

DEVELOPMENT LIMITATIONS

Combining all the limitations discussed above yields a picture of possible development areas, those areas which can provide certain marginal uses under special conditions, and those which should be avoided unless absolutely necessary. The major limitations at the Alleghany County Access Area are exhibited by the soils, slopes, floodplain area and possible archaeological sites.


legend
vegetation
existing buildings
archaeological sites
visual edge
river
steep bluffs
severe soil limitations
overlook and vista
0-8% mod. limitations
0-12% slight limitations
development limitations and
perceptual analysis
0 100 200 400
Alleghany Co. Access Area

Eliminating from consideration the soils which impose severe limitations on park uses removes the largest single portion of the limitations. These soils include the floodplain soils, Codorous and Comus silt loams, and the Ashe and Evard soils with slopes over 12 percent.

Also to be avoided are the areas designated as possibly containing significant archaeological artifacts. No permanent construction which would irretrievably damage these sites will be allowed, although surface uses, such as tent camping and picnicking, which do no subsurface damage, might be possible in these areas.

The remaining land areas are generally suitable for the park uses listed in the soil limitations table. The slopes can be further broken down, however, into those areas with slopes ranging from 0-8 percent, and 8-12 percent. Those areas with slight and moderate limitations within these slopes can also be designated and mapped. The resulting mapped units accurately depict those areas of the site which are best suited for providing recreation opportunities and facilities.

PERCEPTUAL ANALYSIS

In analyzing a site, limitations on development are usually suggested by such things as visual character and the spatial organization of the various elements in the areas. Perceptually, the combination of sloping hillsides, thick vegetation and open, grassy pastureland gives an open, airy feeling to the landscape.

The access road to the site, S.R. 1313, is aligned so that fleeting views across the land are possible; the use of the ridge top for the roadbed makes these views available in practically all directions. The actual shape of the land forms, the height above the New River, and the rock formations in the bluffs across the river become apparent as the viewer progresses down this road toward the river. The height of this ridge top road combines with fairly sparse vegetation to produce spectacular views all the way to the visual horizon, but particularly relates the access site with the immediately surrounding land forms.

As this road gets nearer to the river, the alignment winds lower and lower, changing direction quite often, until it arrives at the base of the slopes. From this location, the bluffs on the opposite side of the river become even more imposing and spectacular. The flatness of the floodplain spread out on the inside of this river bend only serves to accentuate the sheerness of the rock outcrops.

The amount of open pasture land and cultivated floodplain serves to make the site appear open, and makes the amount of space seem larger than it is. Heavy surrounding vegetation gives a feeling of enclosure and security, while openness makes one aware of the scale of objects close by. Being out in the bottomland emphasizes the fact that this long, narrow area is much like being in a bowl. The steep hillsides to one side and the river bluffs on the other somewhat resemble an enclosure to limit the scale of the area. But, on top of the ridge, one has a feeling of being small in the middle of a vast, steep, rolling pasture and woodland. In order to minimize the feeling of being lost in a large open land, most of the time-consuming activities should be kept close to the foot of the slopes. This will serve to give the user more of a feeling of privacy and enclosure.


DEVELOPMENT PLANS

ALLEGHANY COUNTY ACCESS AREA

The downstream terminal access area is located one mile south of the Virginia State Line at the end of S.R. 1313. Known as the Alleghany County Access Area, it will function much the same as its counterpart 26 miles upstream. The only major exception is the absence of a horse camp. No horse trails are proposed north of the U.S. 221 crossing near river mile 15.

A launching site and 15 parking spaces will be provided to serve small, portable watercraft. Twenty family picnic sites are proposed, with typical support facilities, in two locations. Fifteen clustered tables for group use are also included near one of the family use areas, as well as grills, water, and toilet facilities.

Ten primitive campsites are proposed near the river. With the addition of a small separate boat launch area for the use of campers only, these campsites will also serve as a canoe camp. These campsites will be the walk-in type for tent use only. A water source, and vault-type privies will be provided.

This access area will also serve as a trail head for hikers and backpackers who wish to hike upstream. However, the trail will terminate at the Twin Forks campground. Parking for trail users willl be in conjunction with the office and scenic overlook just off the main entrance road. Twenty-four spaces are proposed.

A short distance from the office will be an interpretive shelter and a second overlook for hikers. A small family cemetery near the entrance will be preserved.

Because of the relatively open character of this site, and the need for adequate buffer, more land will be required here than for the Wagoner Road Access, which has a similar scale of facility development. A minimum of 139 acres is proposed, while 174 acres is desirable for a more protected access area.



Alleghany Co. Access Area

key
1 park office
2 picnicking area
3 primitive camp
4 boat launch



view west
Alleghany Co. Access Area



U.S. 221 Access Area

U.S. 221 ACCESS AREA

The most extensive major access area is located just off U.S. Highway 221 in Ashe County at river mile 15.5. Its significance is due to several factors:

1) Excellent accessibility and close proximity to the major tourist route through the New River Valley — U.S. 221.
2) A centralized location for administration and management of the Scenic River.
3) Location at the intersection of two major trail systems, one along the river and the other connecting other major State and Federal Parks within the region.
4) Additional facilities which will not be provided at other areas.

Like the other access areas, the U.S. 221 Access Area will provide a launching site on the river for a variety of small portable watercraft. Associated with the launch area will be 10 tent campsites with related facilities and 25 parking spaces.

Picnicking opportunities will be relatively extensive. Two separate family picnic areas are proposed. The larger consists of 65 tables, whereas a smaller family picnic area with 15 tables will be located in conjunction with the boat launching site. In addition, several group clusters and a 60-person group shelter are proposed. Associated support facilities include grills, waste receptacles, water sources, and toilet facilities, an open space area, as well as 120 parking spaces and three bus spaces.

Twelve isolated primitive campsites for backpackers are proposed. These primitive overnight sites will require water and sanitary facilities, as well as one parking space per unit.

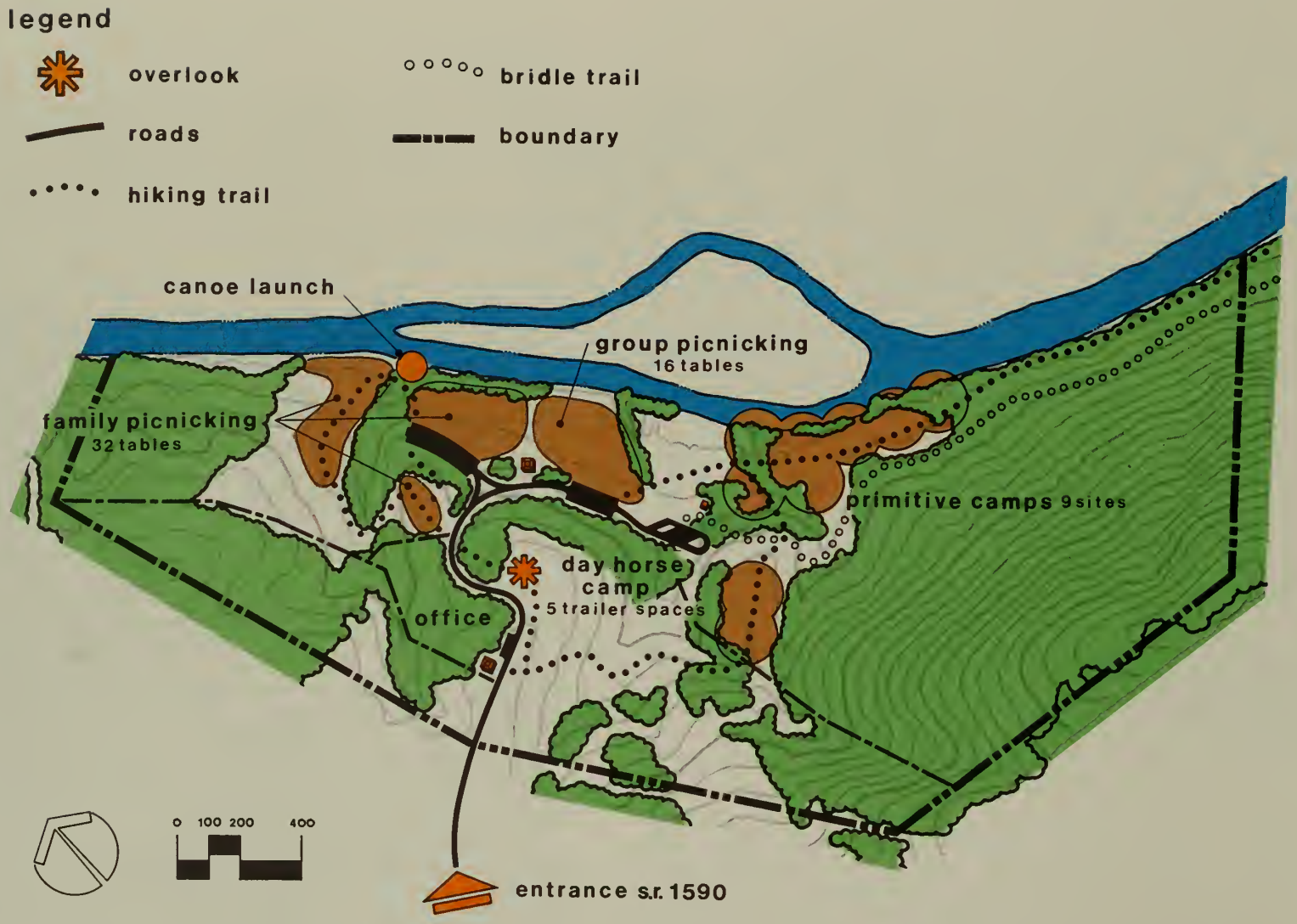
A major distinguishing characteristic of the U.S. 221 Access Area is tent and trailer camping. Two campground loops are proposed. The first consists of 21 proposed campsites, and the other is comprised of 16 sites. The larger loop will have a typical park washhouse, whereas the smaller will have only a toilet building. Each site will have a table, grill, trash receptacle, and pull-off. Tent pads may also be provided for some sites.

An interpretive workshop will provide a meeting and work area, lab, office, and display facilities. Emanating from the workshop will be interpretive trails, both guided and self-guided. A trail for the physically handicapped should also be considered.

Combined with the workshop will be a park office/information station with 10 visitor parking spaces and a maintenance building. A ranger residence will also be located at the U.S. 221 Access Area. A small family cemetery on the site will be preserved.

A minimum of 180 acres will be required for this site, although 196.8 acres is preferred.





Wagoner Road Access Area

WAGONER ROAD ACCESS AREA

The terminal access area on the upstream end of the Scenic River is located in Ashe County, near river mile 26, at the end of Wagoner Road (S.R. 1590). Located just downstream, but opposite Dog Creek, the Wagoner Road Access Area will have favorable public access due to the close proximity of both N.C. Highways 88 and 16.

As the upstream terminus of the Scenic River, the Wagoner Road Access Area will provide direct accessibility to the river for boats, canoes, rafts, and other watercraft. Picnic facilities will include 16 tables for family use and 15 clustered tables for group use, as well as grills, water and toilet facilities. Two centrally located parking areas will provide 48 and 32 spaces respectively, plus a bus space. Day use activities such as hiking, nature study, and bank fishing will be encouraged on the site.

This access area will also serve as a trail head for hikers, backpackers, and horseback riders. Trail users will have access to nine primitive campsites, similar to those provided at the Alleghany Access Area, for overnight stays before or after their trail outings.

A relatively simple, but adequate, Horse Day Camp will provide an embarkation point for small groups of horseback riders. Tie racks for 8-10 horses and parking for five vehicles and trailers will be located at the beginning of the Scenic River horse trail. A water source and sanitary facilites will also be required.

The office/information station will make use of an existing dwelling along Wagoner Road near the entrance to the access area. Eight visitor parking spaces will be provided. A scenic overlook will be located a short walk down the road from the office, towards the river.

A minimum of 93 acres is required for this area. However, an addition of 8.2 acres of buffer near the entrance is desirable. Thus, the total preferred acreage for the Wagoner Road Access Area is approximately 101.2 acres.

REST STOP ONE

The first of two minor use areas will be located approximately 6.5 miles downstream from the Wagoner Road Access Area, near river mile 19.5. Ten primitive campsites and 10 picnic/rest stop sites are proposed, each with a table and grill. A central water source and vault toilets are also proposed.

Because this use area is designed only for persons traversing the river corridor, either by water or trail, no public vehicular access will be provided. However, park rangers will have access for maintenance and patrol via Hoke Wagoner Road (S.R. 2780) in Ashe County. The limited nature of facilities proposed for this site requires the acquisition of only 15 acres.

REST STOP TWO

The second of two minor use areas will be located near Prather's Creek at river mile 10 in Alleghany County. The trail from the 221 Access Area will terminate at this site. However, its facilities are identical to those proposed for the first minor use area. Again, no public vehicular access will be provided. But park rangers will have access for maintenance and patrol via Topia Road and S.R. 1302. A total of 15 acres will be required.

PROJECTED SCENIC RIVER USE

Slightly over 200,000 visitors per year are anticipated for the designated Scenic River, upon completion of all major facilities. Over half of the use, or about 115,000 persons per year, is expected to emanate from the U.S. 221 Access Area. Approximately 40,000 visitors per year are anticipated for either of the Wagoner Road and Alleghany County Access Area. The rest stops are expected to accommodate the remaining number of visitors. Additional use can be expected on privately owned

river-front property, including the Twin Forks Campground.

Long-range use projections indicate an average annual increase of about one and six-tenths percent in addition to the predicted 200,000 visitors per year. These projections are based on a detailed analysis of recreation supply, demand data for specific activities, potential opportunities afforded by the Scenic River, and an analysis of attendance records and trends in other state-operated facilities within the region.

The design capacity of the combined Scenic River access areas and facilities is slightly less than 5,000 visitors in any one day. However, this number is expected only during peak use months, on major holidays and weekends. The average annual daily attendance is expected to be only 550 persons. It is likely that the majority of river visitors will engage in more than one recreational activity.



ADMINISTRATION

SURVEILLANCE AND MAINTENANCE

The decentralized design of scenic river facilities creates its own special administrative and management problems. Patrol of public land and facilities, elimination of potential safety hazards, and the maintenance of boundary markers and signs will be more difficult than in more centralized conditions. Additionally, the trespassing and damage to private property are liable to be a particular problem resulting from increased use of the Scenic River.

Two major objectives are described for field personnel. First, it is necessary to monitor and maintain the scenic integrity and the environmental quality of the river within the limits of the North Carolina law. Secondly, a meaningful recreation program must be provided to the public while care should be taken to maintain good relations with neighbors and protection of private property rights.

Surveillance and patrol operations along the Scenic River will relate directly to those lands owned in fee simple or over which there is a public easement. Nevertheless, it will be a function of field personnel to monitor any misuse of private lands through direct communication with landowners and the regular patrol of boundaries. It will be unlawful for canoeists to "take out" or beach a canoe except on those lands which are owned in fee simple or where there is a trail easement owned by the State. The Scenic River staff will not be responsible for enforcing safety precautions as they relate to canoeing, ie: the capacity of canoes or the ability of its occupants. Staff will not provide lifeguard services.

In order to maintain the resource base at the level to meet State and Federal scenic river criteria, field investigations and periodic meetings between various agencies will be necessary. These meetings are likely to include representation by the North Carolina Department of Natural and Economic Resources, Sections of Water Quality and Land Quality, N. C. Wildlife Resources Commission, Divisions of Parks and Recreation and Forest Resources, the U.S. Department of Agriculture, and the Soil Conservation Service. Field personnel will be largely responsible for regular monitoring of the physical conditions along the Scenic River, as well as securing assistance and special expertise from other agencies in dealing with problems of erosion control, fire prevention, and vegetation and wildlife management.

Maintenance operations for all State properties will emanate from the U.S. 221 Access Area. Repair work for equipment, general storage, and prefabrication construction activities will occur at this site. The Wagoner Road Access Area and Alleghany County Access Area will both have a small storage space for critical supplies.

SERVICES TO PARK USERS

Programs operating in State Parks relating to park security, visitor protection, and information services will be carried on at the New River. Permits for camping and general information will be available from any of the park offices, particularly in the central administrative offices at the U.S. 221 Access Area.

Regarding the distribution of information, greatest emphasis will be placed on direct, one-to-one communication between park visitors and well informed, knowledgeable staff. In addition, effective and up-to-date information displays will be designed for the Wagoner Road, U.S. 221, and Alleghany County Access Areas. These displays will indicate the locations of all facilities and trails, unique features, travel times from point to point, Scenic River boundaries, rules and regulations, as well as guidelines for river or trail use.

No transport services between access ares will be offered by the Scenic River staff. Rather, it is expected that private concessionaires specializing in water recreation and river expeditions will offer such services. A listing of the available transport services, as well as other services offered by the private sector relating to the use of the river, will be posted at each of the main access areas.

Highway directional signs will be placed at appropriate locations near each of the three main public access areas. Information signs will also be placed on the Blue Ridge Parkway giving directions to the U.S. 221 Access Area.

During the time when interim facilities are provided on the river, staff will be limited to a Ranger Naturalist who will be assigned to the Stone Mountain State Park. During the heavy-use season, the Ranger will spend six months, full time, at the river. Additional help will be supplied by hired labor support as needed. As facilities are developed and year-round work loads, increase, a full-time Superintendent will be needed. The Superintendent will need a Park Ranger II and a Ranger-Naturalist to effectively manage the patrol of the five access areas and the entire river length. Support positions of a Clerk Typist I, a general utility man, and labor support will be added as work loads require.

STAFF PHASING

INTERIM	
Permanent	Park Naturalist (part-time)
PHASE I	
Permanent	Ranger Naturalist
Seasonal	Park Attendant (6 months)
	Park Attendant (3 months)
	Clerk Typist I
	Labor Support (Hourly — as needed)
PHASE II	
Permanent	Park Superintendent
	Ranger-Naturalist
	Clerk Typist I (part-time)
Seasonal	Park Attendants (2) (6 months)
	General Utility Man
	Labor Support (Hourly — as needed)





DEVELOPMENT PHASING

Phase I

Site 1 Wagoner Road Access Area

a. Canoe launch
   Parking for 15 cars

b. Family/Group Picnicking
   Toilet bldg.
   15 units in group area
   32 units in family area
   Parking for 65 cars

c. Primitive/Horse Camp
   2 pit toilets
   Parking for 5 horse trailers

d. Roads 2200 l.f.

e. Utilities
   1700 l.f. electric
   800 l.f. telephone
   Well (1), 1600 l.f. waterline

Site 2 Rest Stop One

Primitive Camping (10 units)
   2 pit toilets
   Well with hand pump
   10 picnicking units

Site 3 U.S. 221 Access Area

a. Canoe launch
   15 parking spaces
   15 family picnicking units
   10 primitive camps
   Toilet bldg.

b. Park Office/Maintenance Area/Interpretive Workshop
   30 car parking spaces

c. Group Picnicking
   10 tables

d. Tent and Trailer Camping
   21 units
   Washhouse
   1400 l.f. rd

e. Primitive Camps
   6 units
   1 pit toilet

f. Roads
   7600 l.f.

g. Utilities
   3200 l.f. electric
   800 l.f. telephone
   2 wells w/2000 l.f. of waterline

Site 4 Rest Stop Two
Primitive Camping (10 units)
2 pit toilets
Well w/hand pump
10 picnicking units

Site 5 Alleghany County Access Area
a. Canoe Launch
15 parking spaces
b. Primitive Camp
10 units
2 pit toilets
c. Road 4100 l.f.
d. Utilities
2000 l.f. electric
Well w/2000 l.f. of waterline

General
20 miles of hiking trail

PHASE II

Site 1 Wagoner Road Access Area
Park Office
8 parking spaces

Site 3 U.S. 221 Access Area
a. Family Picnicking (65) units
65 parking spaces
2 toilet bldg.
b. Group Picnicking (10) Tables
Shelter Bldg. w/toilets
22 parking spaces
c. Tent and Trailer Camp
15 units
Toilet Bldg.
1000 l.f. of road
d. Primitive Camp
6 units
Pit toilet
e. Park Residence

Site 5 Alleghany County Access Area

a. Family Picnic Area (26) units
   26 parking spaces
   Toilet bldg.

b. Park Office
   24 parking spaces
   Well

c. Family/Group Picnic Area
   30 units
   30 parking spaces
   Toilet bldg.

General

13 miles of horse trails



UTILITIES

Soil conditions within each of the main access sites present problems for sewer disposal systems. Most of the soil series have moderate to severe limitations in their capacity to support septic tanks due to slope and depth to bedrock conditions on site. Because of the general rural condition of the area, it is not likely that municipal sanitary sewers will ever be feasible. Therefore, detail planning must insure that the proposed facilities will not overload the sites' abilities to absorb the effluent. Final design and location are subject to review by the appropriate County Health Departments.

Electric power and telephone service are available through Appalachian Power Company and General Telephone Company respectively.

Water will be supplied by on-site wells as needed.

Utility requirements of the park use areas for water, electrical and toilet facilities, according to the completed plan, are as follows:

SITE 1

1. Family Picnic Area
   Water — 32 units 256 persons @
   7.5 gal/person ..... 1920 gal/day
   toilet building — septic tank (750 gal.)
   electric required
2. Group Picnic Area
   Water — 15 units 120 persons @
   7.5 gal/person ..... 900 gal/day
   toilet building
   electric required
3. Primitive Camps
   Water — 9 sites 36 persons @
   5 gal/person ..... 180 gal/day
   2 pit toilets
4. Park Office
   Water ..... 500 gal/day
   toilet — septic tank (500 gal.)
   electric, and telephone required

SITE 2

1. Primitive Camping
   Water — 10 sites, 40 persons @
   5 gal/person ..... 200 gal/day
2. Picnicking
   Water — 10 sites, 80 persons @
   5 gal/person ..... 400 gal/day

SITE 3

1. Canoe Camp
   Water — 40 people, @
   7.5 gal/person ..... 300 gal/day
   toilet building — septic tank (750 gal.)
   electric required
2. Park office/maintenance Area
   Water — 1000 gal/day ..... 1000 gal/day
   toilet — septic tank (1000 gal.)
   electric required

3. Family Picnicking
   Water — 520 people @
   7.5 gal/person ..... 4900 gal/day
   2 toilet building — (2) septic tank (750 gal.)
4. Group Picnicking Area
   Water — 160 people @
   715 gal/person ..... 1200 gal/day
   toilet building — septic tank (750 gal.)
   electric required to shelter
5. Tent and Trailer Camp
   Water — 36 sites @
   150 gal/site ..... 5400 gal/day
   toilet building — septic tank 1000 gal.
   washhouse building — septic tank (2500 gal.)
   electric required
6. Primitive Camping
   Water — 12 sites 48 persons @
   5 gal/person ..... 240 gal/day
   2 pit toilets
7. Park Residence
   Water — 4 persons @
   50 gal/person ..... 200 gal/day
   toilet — septic tank (750 gal.)
   electric and telephone required

SITE 4

1. Primitive Camping
   Water — 10 sites, 40 persons @
   5 gal/person ..... 200 gal/day
   2 pit toilets
2. Picnicking
   Water — 10 sites, 80 persons @
   5 gal/day ..... 400 gal/day

SITE 5

1. Family Picnicking
   Water — 20 sites, 120 people @
   7.5 gal/person ..... 1200 gal/day
   toilet building — septic tank (750 gal.)
   electric required
2. Park Office
   Water ..... 500 gal/day
   toilet — septic tank (500 gal.)
   electric, telephone required
3. Family/Group Picnic Area
   Water — 35 sites, 280 persons @
   7.5 gal/person ..... 2100 gal/day
   toilet building — septic tank (750 gal.)
   electric required
4. Primitive Camp
   Water — 10 sites, 40 people @
   5 gal/person ..... 200 gal/day
   2 pit toilets

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